

## SEQUENCE LISTING

<110> Hobom, Gert  
Menke, Annette

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1007337-000000

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acaaagtgtc gcccgagta ctggtcgacc tccgaagttg ggggggagcg aaagcaggca 180

aaccatttga atg gat gtc aat ccg act tta ctg ttc ttg aaa gtt cct 229

Met Asp Val Asn Pro Thr Leu Leu Phe Leu Lys Val Pro  
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gcg caa aat gca ata agt act acg ttc cct tac act gga gat cct cca 277

Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro  
15 20 25

tac agc cat gga aca ggg aca gga tac acc atg gac aca gtc aac agg 325

Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg  
30 35 40 45

aca cat caa tat tcg gaa aag ggg aaa tgg aca aca aac act gag act 373

Thr His Gln Tyr Ser Glu Lys Gly Lys Trp Thr Thr Asn Thr Glu Thr  
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gga gca ccc caa ctt aat cca att gat ggc cca ttg cct gag gac aat 421

Gly Ala Pro Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn  
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2007337-020802

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ttc ctt gaa gaa tcc cat cca gga atc ttt gaa aac tcg tgt ctt gag 517  
 Phe Leu Glu Glu Ser His Pro Gly Ile Phe Glu Asn Ser Cys Leu Glu  
 95 100 105

acg atg gaa gtt gtt caa caa aca aga gtg gac aaa ctg acc caa ggc 565  
 Thr Met Glu Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly  
 110 115 120 125

cgt cag act tat gat tgg act ttg aat aga aac cag cct gct gca act 613  
 Arg Gln Thr Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr  
 130 135 140

gca tta gca aac act ata gag gtc ttt aga tcg aat ggt cta aca gct 661  
 Ala Leu Ala Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala  
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aat gaa tca ggg agg ctc ata gat ttc ctc aag gat gtg atg gaa tca 709  
 Asn Glu Ser Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser  
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atg gat aag gag gaa atg gag ata aca aca cat ttc caa cga aag aga 757  
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aga gta aga gac aac atg acc aag aaa atg gtc aca caa aga aca ata 805  
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 190 195 200 205

ggg aag aaa aag cag aga ctt aac aaa agg agc tac cta ata agg gct 853  
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cta aca ttg aac aca atg acg aaa gat gca gaa aga ggt aaa ctg aag 901  
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aga aga gca att gca aca cca ggg atg cag atc aga ggg ttt gtg tac 949  
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ttt gtt gag aca ctg gcg aga agc att tgc gag aag ctt gaa cag tct 997  
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 255 260 265

ggg cta cca gtt gga ggg aat gag aag aaa gct aaa ttg gca aat gtc 1045  
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 Ile Thr Gly Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met  
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aga aat gtc ttg agc atc gcg ccg ata atg ttt tcg aac aaa atg gcg 1237  
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aca caa ata cca gca gaa atg cta gca agt att gat cta aaa tat ttc 1333  
 Thr Gln Ile Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe  
 370 375 380

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 Asn Glu Pro Thr Arg Lys Lys Ile Glu Lys Ile Arg Pro Leu Ile Ile  
 385 390 395

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aga tac acc aaa acc aca tac tgg tgg gat gga ctt cag tcc tct gat 1525  
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 Ser Lys Lys Lys Ser Tyr Ile Asn Arg Thr Gly Thr Phe Glu Phe Thr  
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agc ttt ttc tac cgc tat gga ttt gta gcc aat ttt agt atg gag ttg 1717  
 Ser Phe Phe Tyr Arg Tyr Gly Phe Val Ala Asn Phe Ser Met Glu Leu  
 495 500 505

ccc agc ttt gga gta tca gga att aat gaa tgc gct gat atg agc att 1765  
 Pro Ser Phe Gly Val Ser Gly Ile Asn Glu Ser Ala Asp Met Ser Ile  
 510 515 520 525

gga gta aca gtg ata aag aat aac atg ata aac aat gat ctt gga ccg 1813  
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aca tac agg tgt cac agg gga gac aca caa atc caa acg agg agg tca 1909  
 Thr Tyr Arg Cys His Arg Gly Asp Thr Gln Ile Gln Thr Arg Arg Ser  
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ttc gag cta aag aag ctg tgg gag cag acc cgc tca aag gca gga ctg 1957  
 Phe Glu Leu Lys Lys Leu Trp Glu Gln Thr Arg Ser Lys Ala Gly Leu  
 575 580 585

ttg gtt tca gat ggc gga cca aac ctg tac aac att cgg aat ctc cac 2005  
 Leu Val Ser Asp Gly Gly Pro Asn Leu Tyr Asn Ile Arg Asn Leu His  
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 Ile Pro Glu Val Cys Leu Lys Trp Glu Leu Met Asp Glu Asp Tyr Gln  
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gga aga ctt tgt aat ccc atg aac ccg ttt gtc agt cat aag gaa att 2101  
 Gly Arg Leu Cys Asn Pro Met Asn Pro Phe Val Ser His Lys Glu Ile  
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gaa tct gta aac aat gct gcg gta atg cca gcc cat ggt cca gcc aaa 2149  
 Glu Ser Val Asn Asn Ala Ala Val Met Pro Ala His Gly Pro Ala Lys  
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 Ser Met Glu Tyr Asp Ala Val Ala Thr Thr His Ser Trp Ile Pro Lys  
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 Arg Asn Arg Ser Ile Leu Asn Thr Ser Gln Arg Gly Ile Leu Glu Asp  
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gaa caa atg tac cag aag tgt tgc aac cta ttc gag aaa ttc ttc cct 2293  
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 720 725 730

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 Arg Ile Lys Lys Glu Glu Phe Ala Glu Ile Met Lys Ile Cys Ser Thr  
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Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg Thr His Gln  
35 40 45

Tyr Ser Glu Lys Gly Lys Trp Thr Thr Asn Thr Glu Thr Gly Ala Pro  
50 55 60

Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn Glu Pro Ser  
65 70 75 80

Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala Phe Leu Glu  
85 90 95

Glu Ser His Pro Gly Ile Phe Glu Asn Ser Cys Leu Glu Thr Met Glu  
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Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly Arg Gln Thr  
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Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser Met Asp Lys  
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Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg Arg Val Arg  
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Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile Gly Lys Lys  
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Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala Leu Thr Leu  
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Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys Arg Arg Ala  
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Ile Ala Thr Pro Gly Met Gln Ile Arg Gly Phe Val Tyr Phe Val Glu  
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Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser Gly Leu Pro  
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Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val Val Arg Lys  
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Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met Phe Leu Ala  
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Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe Arg Asn Val  
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Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala Arg Leu Gly  
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 Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Leu Arg Thr Gln Ile  
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 Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe Asn Glu Pro  
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 Ala Ser Leu Ser Pro Gly Met Met Met Gly Met Phe Asn Met Leu Ser  
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 Arg Phe Tyr Arg Thr Cys Lys Leu Val Gly Ile Asn Met Ser Lys Lys  
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 Arg Gln Thr Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr  
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gca ttg gcc aac aca ata gaa gtg ttc aga tca aat ggc ctc acg gcc 661  
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aat gaa tct gga agg ctc ata gac ttc ctt aag gat gta atg gag tca 709  
 Asn Glu Ser Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser  
 160 165 170

atg aac aaa gaa gaa atg gag atc aca act cat ttt cag aga aag aga 757  
 Met Asn Lys Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg  
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cga gtg aga gac aat atg act aag aaa atg gtg aca cag aga aca ata 805  
 Arg Val Arg Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile  
 190 195 200 205

ggt aaa agg aag cag aga ttg aac aaa agg agt tat cta att agg gca 853  
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tta acc ctg aac aca atg acc aaa gat gct gag aga ggg aag cta aaa 901  
 Leu Thr Leu Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys  
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cgg aga gca att gca acc cca ggg atg caa ata agg ggg ttt gta tac 949  
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 Phe Val Glu Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser  
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 Val Arg Lys Met Met Thr Asn Ser Gln Asp Thr Glu Ile Ser Phe Thr  
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 Phe Leu Ala Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe  
 320 325 330

aga aat gtt cta agt att gct cca ata atg ttc tca aac aaa atg gcg 1237  
 Arg Asn Val Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala  
 335 340 345

aga ctg gga aag ggg tac atg ttt gag agc aag agt atg aaa att aga 1285  
 Arg Leu Gly Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Ile Arg  
 350 355 360 365

act caa ata cct gca gaa atg cta gca agc atc gat ttg aaa tac ttc 1333  
 Thr Gln Ile Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe  
 370 375 380

aat gat tca act aga aag aag att gaa aaa atc cgg ccg ctc tta ata 1381  
 Asn Asp Ser Thr Arg Lys Lys Ile Glu Lys Ile Arg Pro Leu Leu Ile  
 385 390 395

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|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |      |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------|
| gat<br>Asp | ggg<br>Gly | act<br>Thr | gca<br>Ala | tca<br>Ser | ttg<br>Leu | agc<br>Ser | cct<br>Pro | gga<br>Gly | atg<br>Met | atg<br>Met | atg<br>Met | ggc<br>Gly | atg<br>Met | ttc<br>Phe | aat<br>Asn | 1429 |
|            |            | 400        |            |            |            |            | 405        |            |            |            |            | 410        |            |            |            |      |
| atg<br>Met | tta<br>Leu | agt<br>Ser | act<br>Thr | gta<br>Val | tta<br>Leu | ggc<br>Gly | gtc<br>Val | tcc<br>Ser | atc<br>Ile | ctg<br>Leu | aat<br>Asn | ctt<br>Leu | gga<br>Gly | caa<br>Gln | aag<br>Lys | 1477 |
|            | 415        |            |            |            |            | 420        |            |            |            |            | 425        |            |            |            |            |      |
| aga<br>Arg | cac<br>His | acc<br>Thr | aag<br>Lys | act<br>Thr | act<br>Thr | tac<br>Tyr | tgg<br>Trp | tgg<br>Trp | gat<br>Asp | ggt<br>Gly | ctt<br>Leu | caa<br>Gln | tct<br>Ser | tct<br>Ser | gat<br>Asp | 1525 |
| 430        |            |            |            |            | 435        |            |            |            |            | 440        |            |            |            |            | 445        |      |
| gat<br>Asp | ttt<br>Phe | gct<br>Ala | ctg<br>Leu | att<br>Ile | gtg<br>Val | aat<br>Asn | gca<br>Ala | ccc<br>Pro | aat<br>Asn | cat<br>His | gaa<br>Glu | ggg<br>Gly | att<br>Ile | caa<br>Gln | gcc<br>Ala | 1573 |
|            |            |            |            | 450        |            |            |            |            | 455        |            |            |            |            | 460        |            |      |
| gga<br>Gly | gtc<br>Val | aac<br>Asn | agg<br>Arg | ttt<br>Phe | tat<br>Tyr | cga<br>Arg | acc<br>Thr | tgt<br>Cys | aag<br>Lys | cta<br>Leu | ctt<br>Leu | gga<br>Gly | att<br>Ile | aat<br>Asn | atg<br>Met | 1621 |
|            |            |            | 465        |            |            |            |            | 470        |            |            |            |            | 475        |            |            |      |
| agc<br>Ser | aag<br>Lys | aaa<br>Lys | aag<br>Lys | tct<br>Ser | tac<br>Tyr | ata<br>Ile | aac<br>Asn | aga<br>Arg | aca<br>Thr | ggt<br>Gly | aca<br>Thr | ttt<br>Phe | gaa<br>Glu | ttc<br>Phe | aca<br>Thr | 1669 |
|            |            | 480        |            |            |            |            | 485        |            |            |            |            | 490        |            |            |            |      |
| agc<br>Ser | ttt<br>Phe | ttc<br>Phe | tat<br>Tyr | cgt<br>Arg | tat<br>Tyr | ggg<br>Gly | ttt<br>Phe | gtt<br>Val | gcc<br>Ala | aat<br>Asn | ttc<br>Phe | agc<br>Ser | atg<br>Met | gag<br>Glu | ctt<br>Leu | 1717 |
|            | 495        |            |            |            |            | 500        |            |            |            |            | 505        |            |            |            |            |      |
| ccc<br>Pro | agc<br>Ser | ttt<br>Phe | ggg<br>Gly | gtg<br>Val | tct<br>Ser | ggg<br>Gly | atc<br>Ile | aac<br>Asn | gag<br>Glu | tct<br>Ser | gcg<br>Ala | gac<br>Asp | atg<br>Met | agt<br>Ser | att<br>Ile | 1765 |
| 510        |            |            |            |            | 515        |            |            |            |            | 520        |            |            |            |            | 525        |      |
| gga<br>Gly | gtt<br>Val | act<br>Thr | gtc<br>Val | atc<br>Ile | aaa<br>Lys | aac<br>Asn | aat<br>Asn | atg<br>Met | ata<br>Ile | aac<br>Asn | aat<br>Asn | gat<br>Asp | ctt<br>Leu | ggt<br>Gly | cca<br>Pro | 1813 |
|            |            |            |            | 530        |            |            |            |            | 535        |            |            |            |            | 540        |            |      |
| gca<br>Ala | acc<br>Thr | gct<br>Ala | caa<br>Gln | atg<br>Met | gcc<br>Ala | ctt<br>Leu | cag<br>Gln | ctg<br>Leu | ttc<br>Phe | atc<br>Ile | aaa<br>Lys | gat<br>Asp | tac<br>Tyr | agg<br>Arg | tac<br>Tyr | 1861 |
|            |            |            | 545        |            |            |            |            | 550        |            |            |            |            | 555        |            |            |      |
| acg<br>Thr | tac<br>Tyr | cgg<br>Arg | tgc<br>Cys | cat<br>His | aga<br>Arg | ggt<br>Gly | gac<br>Asp | aca<br>Thr | caa<br>Gln | ata<br>Ile | caa<br>Gln | acc<br>Thr | cga<br>Arg | aga<br>Arg | tca<br>Ser | 1909 |
|            |            | 560        |            |            |            |            | 565        |            |            |            |            | 570        |            |            |            |      |
| ttt<br>Phe | gaa<br>Glu | ata<br>Ile | aag<br>Lys | aaa<br>Lys | ctg<br>Leu | tgg<br>Trp | gag<br>Glu | caa<br>Gln | acc<br>Thr | cat<br>His | tcc<br>Ser | aaa<br>Lys | gct<br>Ala | gga<br>Gly | ctg<br>Leu | 1957 |
|            | 575        |            |            |            |            | 580        |            |            |            |            | 585        |            |            |            |            |      |
| ctg<br>Leu | gtc<br>Val | tcc<br>Ser | gac<br>Asp | gga<br>Gly | ggc<br>Gly | cca<br>Pro | aat<br>Asn | tta<br>Leu | tac<br>Tyr | aac<br>Asn | att<br>Ile | aga<br>Arg | aat<br>Asn | ctc<br>Leu | cac<br>His | 2005 |
| 590        |            |            |            |            | 595        |            |            |            |            | 600        |            |            |            |            | 605        |      |
| att<br>Ile | cct<br>Pro | gaa<br>Glu | gtc<br>Val | tgc<br>Cys | ttg<br>Leu | aaa<br>Lys | tgg<br>Trp | gaa<br>Glu | tta<br>Leu | atg<br>Met | gat<br>Asp | gag<br>Glu | gat<br>Asp | tac<br>Tyr | cag<br>Gln | 2053 |
|            |            |            |            | 610        |            |            |            |            | 615        |            |            |            |            | 620        |            |      |
| ggg<br>Gly | cgt<br>Arg | tta<br>Leu | tgc<br>Cys | aac<br>Asn | cca<br>Pro | ctg<br>Leu | aac<br>Asn | cca<br>Pro | ttt<br>Phe | gtc<br>Val | aac<br>Asn | cat<br>His | aaa<br>Lys | gac<br>Asp | att<br>Ile | 2101 |
|            |            |            | 625        |            |            |            |            | 630        |            |            |            |            | 635        |            |            |      |
| gaa<br>Glu | tca<br>Ser | gtg<br>Val | aac<br>Asn | aat<br>Asn | gca<br>Ala | gtg<br>Val | ata<br>Ile | atg<br>Met | cca<br>Pro | gca<br>Ala | cat<br>His | ggt<br>Gly | cca<br>    |            |            |      |

tctgacgctc agtggaacga aaactcacgt taagggattt tgggtcatgag attatcaaaa 369:

aggatcttca cctagatcct tttaaattaa aatgaagtt tttaatcaat staaagtata 3751  
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<211> 757

<212> PRT

<213> Artificial Sequence

<223> Description of Artificial Sequence: WSN-PB1

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Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro Tyr Ser His  
 20 25 30

Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg Thr His Gln  
 35 40 45



Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr Gly Ala Pro  
 50 55 60  
 Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn Glu Pro Ser  
 65 70 75 80  
 Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala Phe Leu Glu  
 85 90 95  
 Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu Thr Met Glu  
 100 105 110  
 Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly Arg Gln Thr  
 115 120 125  
 Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr Ala Leu Ala  
 130 135 140  
 Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala Asn Glu Ser  
 145 150 155 160  
 Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser Met Asn Lys  
 165 170 175  
 Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg Arg Val Arg  
 180 185 190  
 Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile Gly Lys Arg  
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 Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala Leu Thr Leu  
 210 215 220  
 Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys Arg Arg Ala  
 225 230 235 240  
 Ile Ala Thr Pro Gly Met Gln Ile Arg Gly Phe Val Tyr Phe Val Glu  
 245 250 255  
 Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser Gly Leu Pro  
 260 265 270  
 Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val Val Arg Lys  
 275 280 285  
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 Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met Phe Leu Ala  
 305 310 315 320  
 Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe Arg Asn Val  
 325 330 335  
 Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala Arg Leu Gly  
 340 345 350  
 Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Ile Arg Thr Gln Ile  
 355 360 365  
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|     |     |     |     |     |     |       |     |     |     |     |     |     |     |     |     |  |
|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Ala | Ser | Leu | Ser | Pro | Gly | Met   | Met | Met | Gly | Met | Phe | Asn | Met | Leu | Ser |  |
|     |     |     |     | 405 |     |       |     |     | 410 |     |     |     |     |     | 415 |  |
| Thr | Val | Leu | Gly | Val | Ser | Ile   | Leu | Asn | Leu | Gly | Gln | Lys | Arg | His | Thr |  |
|     |     |     | 420 |     |     |       |     | 425 |     |     |     |     | 430 |     |     |  |
| Lys | Thr | Thr | Tyr | Trp | Trp | Asp   | Gly | Leu | Gln | Ser | Ser | Asp | Asp | Phe | Ala |  |
|     |     | 435 |     |     |     |       | 440 |     |     |     |     | 445 |     |     |     |  |
| Leu | Ile | Val | Asn | Ala | Pro | Asn   | His | Glu | Gly | Ile | Gln | Ala | Gly | Val | Asn |  |
|     | 450 |     |     |     |     | 455   |     |     |     |     | 460 |     |     |     |     |  |
| Arg | Phe | Tyr | Arg | Thr | Cys | Lys   | Leu | Leu | Gly | Ile | Asn | Met | Ser | Lys | Lys |  |
| 465 |     |     |     |     | 470 |       |     |     |     | 475 |     |     |     |     | 480 |  |
| Lys | Ser | Tyr | Ile | Asn | Arg | Thr   | Gly | Thr | Phe | Glu | Phe | Thr | Ser | Phe | Phe |  |
|     |     |     |     | 485 |     |       |     |     | 490 |     |     |     |     | 495 |     |  |
| Tyr | Arg | Tyr | Gly | Phe | Val | Ala   | Asn | Phe | Ser | Met | Glu | Leu | Pro | Ser | Phe |  |
|     |     |     | 500 |     |     |       |     | 505 |     |     |     |     | 510 |     |     |  |
| Gly | Val | Ser | Gly | Ile | Asn | Glu   | Ser | Ala | Asp | Met | Ser | Ile | Gly | Val | Thr |  |
|     |     | 515 |     |     |     |       | 520 |     |     |     |     | 525 |     |     |     |  |
| Val | Ile | Lys | Asn | Asn | Met | Ile   | Asn | Asn | Asp | Leu | Gly | Pro | Ala | Thr | Ala |  |
|     | 530 |     |     |     |     | 535   |     |     |     |     | 540 |     |     |     |     |  |
| Gln | Met | Ala | Leu | Gln | Leu | Phe   | Ile | Lys | Asp | Tyr | Arg | Tyr | Thr | Tyr | Arg |  |
| 545 |     |     |     |     | 550 |       |     |     |     | 555 |     |     |     |     | 560 |  |
| Cys | His | Arg | Gly | Asp | Thr | Gln   | Ile | Gln | Thr | Arg | Arg | Ser | Phe | Glu | Ile |  |
|     |     |     |     | 565 |     |       |     |     | 570 |     |     |     |     | 575 |     |  |
| Lys | Lys | Leu | Trp | Glu | Gln | Thr   | His | Ser | Lys | Ala | Gly | Leu | Leu | Val | Ser |  |
|     |     |     | 580 |     |     |       |     | 585 |     |     |     |     | 590 |     |     |  |
| Asp | Gly | Gly | Pro | Asn | Leu | Tyr   | Asn | Ile | Arg | Asn | Leu | His | Ile | Pro | Glu |  |
|     |     | 595 |     |     |     |       | 600 |     |     |     |     | 605 |     |     |     |  |
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|     | 610 |     |     |     |     | 615   |     |     |     |     | 620 |     |     |     |     |  |
| Cys | Asn | Pro | Leu | Asn | Pro | Phe   | Val | Asn | His | Lys | Asp | Ile | Glu | Ser | Val |  |
| 625 |     |     |     |     | 630 |       |     |     |     | 635 |     |     |     |     | 640 |  |
| Asn | Asn | Ala | Val | Ile | Met | Pro   | Ala | His | Gly | Pro | Ala | Lys | Asn | Met | Glu |  |
|     |     |     |     | 645 |     |       |     |     | 650 |     |     |     |     | 655 |     |  |
| Tyr | Asp | Ala | Val | Ala | Thr | Thr   | His | Ser | Trp | Ile | Pro | Lys | Arg | Asn | Arg |  |
|     |     |     | 660 |     |     |       |     | 665 |     |     |     |     | 670 |     |     |  |
| Ser | Ile | Leu | Asn | Thr | Ser | Gln   | Arg | Gly | Ile | Leu | Glu | Asp | Glu | Gln | Met |  |
|     |     | 675 |     |     |     |       | 680 |     |     |     |     | 685 |     |     |     |  |
| Tyr | Gln | Lys | Cys | Cys | Asn | Leu   | Phe | Glu | Lys | Phe | Phe | Pro | Ser | Ser | Ser |  |
|     | 690 |     |     |     |     | 695   |     |     |     |     | 700 |     |     |     |     |  |
| Tyr | Arg | Arg | Pro | Val | Gly | Ile   | Ser | Ser | Met | Val | Glu | Ala | Met | Val | Ser |  |
| 705 |     |     |     |     | 710 |       |     |     |     | 715 |     |     |     |     | 720 |  |
| Arg | Ala | Arg | Ile | Asp | Ala | Arg   | Ile | Asp | Phe | Glu | Ser | Gly | Arg | Ile | Lys |  |
|     |     |     |     | 725 |     |       |     |     | 730 |     |     |     |     | 735 |     |  |
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Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro  
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Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg  
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| atg | aac   | aaa | gaa | gaa | atg | gag | atc | aca | act | cat | ttt | cag | aga | aag | aga | 757  |
| Met | Asn   | Lys | Glu | Glu | Met | Glu | Ile | Thr | Thr | His | Phe | Gln | Arg | Lys | Arg |      |
| 175 |       |     |     |     |     | 180 |     |     |     |     | 185 |     |     |     |     |      |
| cga | gtg   | aga | gac | aat | atg | act | aag | aaa | atg | gtg | aca | cag | aga | aca | ata | 805  |
| Arg | Val   | Arg | Asp | Asn | Met | Thr | Lys | Lys | Met | Val | Thr | Gln | Arg | Thr | Ile |      |
| 190 |       |     |     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |      |
| ggt | aaa   | agg | aag | cag | aga | ttg | aac | aaa | agg | agt | tat | cta | att | agg | gca | 853  |
| Gly | Lys   | Arg | Lys | Gln | Arg | Leu | Asn | Lys | Arg | Ser | Tyr | Leu | Ile | Arg | Ala |      |
|     |       |     |     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |      |
| tta | acc   | ctg | aac | aca | atg | acc | aaa | gat | gct | gag | aga | ggg | aag | cta | aaa | 901  |
| Leu | Thr   | Leu | Asn | Thr | Met | Thr | Lys | Asp | Ala | Glu | Arg | Gly | Lys | Leu | Lys |      |
|     |       |     | 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |      |
| cgg | aga   | gca | att | gca | acc | cca | ggg | atg | caa | ata | agg | ggg | ttt | gta | tac | 949  |
| Arg | Arg   | Ala | Ile | Ala | Thr | Pro | Gly | Met | Gln | Ile | Arg | Gly | Phe | Val | Tyr |      |
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| ttt | gtt   | gag | aca | cta | gca | agg | agt | ata | tgt | gag | aaa | ctt | gaa | caa | tca | 997  |
| Phe | Val   | Glu | Thr | Leu | Ala | Arg | Ser | Ile | Cys | Glu | Lys | Leu | Glu | Gln | Ser |      |
|     | 255   |     |     |     |     | 260 |     |     |     |     | 265 |     |     |     |     |      |
| gga | ttg   | cca | gtt | gga | ggc | aat | gag | aag | aaa | gca | aag | ttg | gca | aat | gtt | 1045 |
| Gly | Leu   | Pro | Val | Gly | Gly | Asn | Glu | Lys | Lys | Ala | Lys | Leu | Ala | Asn | Val |      |
| 270 |       |     |     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |      |
| gta | agg   | aag | atg | atg | acc | aat | tct | cag | gac | act | gaa | att | tct | ttc | acc | 1093 |
| Val | Arg   | Lys | Met | Met | Thr | Asn | Ser | Gln | Asp | Thr | Glu | Ile | Ser | Phe | Thr |      |
|     |       |     |     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |      |
| atc | act   | gga | gat | aac | acc | aaa | tgg | aac | gaa | aat | cag | aac | cct | cgg | atg | 1141 |
| Ile | Thr   | Gly | Asp | Asn | Thr | Lys | Trp | Asn | Glu | Asn | Gln | Asn | Pro | Arg | Met |      |
|     |       |     | 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |      |
| ttt | ttg   | gcc | atg | atc | aca | tat | ata | acc | aga | aat | cag | ccc | gaa | tgg | ttc | 1189 |
| Phe | Leu   | Ala | Met | Ile | Thr | Tyr | Ile | Thr | Arg | Asn | Gln | Pro | Glu | Trp | Phe |      |
|     |       | 320 |     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |      |
| aga | aat   | gtt | cta | agt | att | gct | cca | ata | atg | ttc | tca | aac | aaa | atg | gcg | 1237 |
| Arg | Asn   | Val | Leu | Ser | Ile | Ala | Pro | Ile | Met | Phe | Ser | Asn | Lys | Met | Ala |      |
|     | 335   |     |     |     |     | 340 |     |     |     |     | 345 |     |     |     |     |      |
| aga | ctg   | gga | aag | ggg | tac | atg | ttt | gag | agc | aag | agt | atg | aaa | att | aga | 1285 |
| Arg | Leu   | Gly | Lys | Gly | Tyr | Met | Phe | Glu | Ser | Lys | Ser | Met | Lys | Ile | Arg |      |
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| Thr | Gln   | Ile | Pro | Ala | Glu | Met | Leu | Ala | Ser | Ile | Asp | Leu | Lys | Tyr | Phe |      |
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| aat | gat</ |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |

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| gat | ttt | gct | ctg | att | gtg | aat | gca | ccc | aat | cat | gaa | ggg | att | caa | gcc | 1573 |
| Asp | Phe | Ala | Leu | Ile | Val | Asn | Ala | Pro | Asn | His | Glu | Gly | Ile | Gln | Ala |      |
|     |     |     | 450 |     |     |     |     |     | 455 |     |     |     |     | 460 |     |      |
| gga | gtc | aac | agg | ttt | tat | cga | acc | tgt | aag | cta | ctt | gga | att | aat | atg | 1621 |
| Gly | Val | Asn | Arg | Phe | Tyr | Arg | Thr | Cys | Lys | Leu | Leu | Gly | Ile | Asn | Met |      |
|     |     |     | 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |      |
| agc | aag | aaa | aag | tct | tac | ata | aac | aga | aca | ggc | aca | ttt | gaa | ttc | aca | 1669 |
| Ser | Lys | Lys | Lys | Ser | Tyr | Ile | Asn | Arg | Thr | Gly | Thr | Phe | Glu | Phe | Thr |      |
|     |     | 480 |     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |      |
| agc | ttt | ttc | tac | cgc | tat | gga | ttt | gta | gcc | aat | ttt | agt | atg | gag | ttg | 1717 |
| Ser | Phe | Phe | Tyr | Arg | Tyr | Gly | Phe | Val | Ala | Asn | Phe | Ser | Met | Glu | Leu |      |
|     | 495 |     |     |     |     | 500 |     |     |     |     | 505 |     |     |     |     |      |
| ccc | agc | ttt | gga | gta | tca | gga | att | aat | gaa | tcg | gct | gat | atg | agc | att | 1765 |
| Pro | Ser | Phe | Gly | Val | Ser | Gly | Ile | Asn | Glu | Ser | Ala | Asp | Met | Ser | Ile |      |
| 510 |     |     |     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |      |
| gga | gta | aca | gtg | ata | aag | aat | aac | atg | ata | aac | aat | gat | ctt | gga | ccg | 1813 |
| Gly | Val | Thr | Val | Ile | Lys | Asn | Asn | Met | Ile | Asn | Asn | Asp | Leu | Gly | Pro |      |
|     |     |     |     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |      |
| gca | aca | gcc | caa | atg | gct | ctc | caa | tta | ttc | atc | aag | gac | tac | aga | tat | 1861 |
| Ala | Thr | Ala | Gln | Met | Ala | Leu | Gln | Leu | Phe | Ile | Lys | Asp | Tyr | Arg | Tyr |      |
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| Thr | Tyr | Arg | Cys | His | Arg | Gly | Asp | Thr | Gln | Ile | Gln | Thr | Arg | Arg | Ser |      |
|     |     | 560 |     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |      |
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| Phe | Glu | Leu | Lys | Lys | Leu | Trp | Glu | Gln | Thr | Arg | Ser | Lys | Ala | Gly | Leu |      |
|     | 575 |     |     |     |     | 580 |     |     |     |     | 585 |     |     |     |     |      |
| ttg | gtt | tca | gat | ggc | gga | cca | aac | ctg | tac | aac | att | cgg | aat | ctc | cac | 2005 |
| Leu | Val | Ser | Asp | Gly | Gly | Pro | Asn | Leu | Tyr | Asn | Ile | Arg | Asn | Leu | His |      |
| 590 |     |     |     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |      |
| atc | ccg | gaa | gtt | tgc | ctg | aaa | tgg | gaa | cta | atg | gat | gaa | gac | tat | cag | 2053 |
| Ile | Pro | Glu | Val | Cys | Leu | Lys | Trp | Glu | Leu | Met | Asp | Glu | Asp | Tyr | Gln |      |
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| gga | aga | ctt | tgt | aat | ccc | atg | aac | ccg | ttt | gtc | agt | cat | aag | gaa | att | 2101 |
| Gly | Arg | Leu | Cys | Asn | Pro | Met | Asn | Pro | Phe | Val | Ser | His | Lys | Glu | Ile |      |
|     |     |     | 625 |     |     |     |     | 630 |     |     |     |     | 635 |     |     |      |
| gaa | tct | gta | aac | aat | gct | gcg | gta | atg | cca | gcc | cat | ggc | cca | gcc | aaa | 2149 |
| Glu | Ser | Val | Asn | Asn | Ala | Ala | Val | Met | Pro | Ala | His | Gly | Pro | Ala | Lys |      |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |

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atg gtg tct agg gcc cgg att gat gca cga att gac ttc gag tct gga 2389  
 Met Val Ser Arg Ala Arg Ile Asp Ala Arg Ile Asp Phe Glu Ser Gly  
 720 725 730

agg att aag aag gaa gag ttt gct gag atc atg aag atc tgt tcc acc 2437  
 Arg Ile Lys Lys Glu Glu Phe Ala Glu Ile Met Lys Ile Cys Ser Thr  
 735 740 745

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Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn Glu Pro Ser  
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Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala Phe Leu Glu  
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Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu Thr Met Glu  
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 Ala Ser Leu Ser Pro Gly Met Met Met Gly Met Phe Asn Met Leu Ser  
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 Lys Thr Thr Tyr Trp Trp Asp Gly Leu Gln Ser Ser Asp Asp Phe Ala  
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10073377-020802



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| acaaagtgtc  | gcccggagta  | ctggtcgcacc | tccgaagttg | gggggggagcg | aaagcaggca | 180 |
| aaccatttga  | atg gat gtc aat ccg act tta ctg ttc ttg aaa gtt cct |             |            |             |            | 229 |
|   | Met Asp Val Asn Pro Thr Leu Leu Phe Leu Lys Val Pro |             |            |             |            |     |
|   | 1   |             | 5          |             | 10         |     |
| gcg caa aat gca ata agt act acg ttc cct tac act gga gat cct cca |   |             |            |             |            | 277 |
| Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro |   |             |            |             |            |     |
|   | 15  |             | 20         |             | 25         |     |
| tac agc cat gga aca ggg aca gga tac acc atg gac aca gtc aac agg |   |             |            |             |            | 325 |
| Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg |   |             |            |             |            |     |
|   | 30  |             | 35         |             | 40         | 45  |
| aca cac caa tat tgc gaa aag ggg aaa tgg aca aca aac act gag act |   |             |            |             |            | 373 |
| Thr His Gln Tyr Ser Glu Lys Gly Lys Trp Thr Thr Asn Thr Glu Thr |   |             |            |             |            |     |
|   |   | 50          |            |             | 55         | 60  |
| gga gca ccc caa ctt aat cca att gat ggc cca ttg cct gag gac aat |   |             |            |             |            | 421 |
| Gly Ala Pro Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn |   |             |            |             |            |     |
|   |   | 65          |            |             | 70         | 75  |
| gaa cca agt gga tat gca caa aca gac tgc gtc ctg gaa gca atg gct |   |             |            |             |            | 469 |
| Glu Pro Ser Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala |   |             |            |             |            |     |
|   | 80  |             |            |             | 85         | 90  |
| ctc ctt gaa gaa tcc cat cca gga atc ttt gaa aac tgc tgt ctt gag |   |             |            |             |            | 517 |
| Phe Leu Glu Glu Ser His Pro Gly Ile Phe Glu Asn Ser Cys Leu Glu |   |             |            |             |            |     |
|   | 95  |             |            |             | 100        | 105 |
| acg atg gaa gtt gtt caa caa aca aga gtg gac aaa ctg acc caa ggc |   |             |            |             |            | 565 |
| Thr Met Glu Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly |   |             |            |             |            |     |
|   | 110   |             |            |             | 115        | 120 |
| agt cag act tat gat tgg act ttg aat aga aac cag cct gct gca act |   |             |            |             |            | 613 |
| Arg Gln Thr Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr |   |             |            |             |            |     |
|   |   | 130         |            |             | 135        | 140 |
| ca tta gca aac act ata gag gtc ttt aga tgc aat ggt cta aca gct  |   |             |            |             |            | 661 |
| Ala Leu Ala Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala |   |             |            |             |            |     |
|   |   | 145         |            |             | 150        | 155 |
| at gaa tca ggg agg ctc ata gat ttc ctc aag gat gtg atg gaa tca  |   |             |            |             |            | 709 |
| asn Glu Ser Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser |   |             |            |             |            |     |
|   |   | 160         |            |             | 165        | 170 |
| tg gat aag gag gaa atg gag ata aca aca cat ttc caa cga aag aga  |   |             |            |             |            | 757 |
| et Asp Lys Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg  |   |             |            |             |            |     |
|   | 175   |             |            |             | 180        | 185 |
| ga gta aga gac aac atg acc aag aaa atg gtc aca caa aga aca ata  |   |             |            |             |            | 805 |
| arg Val Arg Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile |   |             |            |             |            |     |
|   | 90  |             |            |             | 195        | 200 |
| gg aag aaa aag cag aga ctt aac aaa agg agc tac cta ata agg gct  |   |             |            |             |            | 853 |
| ly Lys Lys Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala  |   |             |            |             |            |     |
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 240 245 250

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 Phe Val Glu Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser  
 255 260 265

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 Arg Leu Gly Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Leu Arg  
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 Thr Gln Ile Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe  
 370 375 380

aat gaa cca aca agg aag aaa atc gag aaa ata agg cct ctc ata ata 1381  
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 Ser Lys Lys Lys Ser Tyr Ile Asn Arg Thr Gly Thr Phe Glu Phe Thr  
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1007337-020302

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| agc<br>Ser | ttt<br>Phe | ttc<br>Phe | tat<br>Tyr | cgt<br>Arg | tat<br>Tyr | ggg<br>Gly | ttt<br>Phe | gtt<br>Val | gcc<br>Ala | aat<br>Asn | ttc<br>Phe | agc<br>Ser | atg<br>Met   | gag<br>Glu | ctt<br>Leu | 1717 |
| 495        |            |            |            |            |            | 500        |            |            |            |            | 505        |            |              |            |            |      |
| ccc<br>Pro | agc<br>Ser | ttt<br>Phe | ggg<br>Gly | gtg<br>Val | tct<br>Ser | ggg<br>Gly | atc<br>Ile | aac<br>Asn | gag<br>Glu | tct<br>Ser | gcg<br>Ala | gac<br>Asp | atg<br>Met   | agt<br>Ser | att<br>Ile | 1765 |
| 510        |            |            |            |            | 515        |            |            |            |            | 520        |            |            |              |            | 525        |      |
| gga<br>Gly | gtt<br>Val | act<br>Thr | gtc<br>Val | atc<br>Ile | aaa<br>Lys | aac<br>Asn | aat<br>Asn | atg<br>Met | ata<br>Ile | aac<br>Asn | aat<br>Asn | gat<br>Asp | ctt<br>Leu   | ggt<br>Gly | cca<br>Pro | 1813 |
|            |            |            |            | 530        |            |            |            |            | 535        |            |            |            |              | 540        |            |      |
| gca<br>Ala | acc<br>Thr | gct<br>Ala | caa<br>Gln | atg<br>Met | gcc<br>Ala | ctt<br>Leu | cag<br>Gln | ctg<br>Leu | ttc<br>Phe | atc<br>Ile | aaa<br>Lys | gat<br>Asp | tac<br>Tyr   | agg<br>Arg | tac<br>Tyr | 1861 |
|            |            |            | 545        |            |            |            |            | 550        |            |            |            |            | 555          |            |            |      |
| acg<br>Thr | tac<br>Tyr | cgg<br>Arg | tgc<br>Cys | cat<br>His | aga<br>Arg | ggg<br>Gly | gac<br>Asp | aca<br>Thr | caa<br>Gln | ata<br>Ile | caa<br>Gln | acc<br>Thr | cga<br>Arg   | aga<br>Arg | tca<br>Ser | 1909 |
|            |            | 560        |            |            |            |            | 565        |            |            |            |            | 570        |              |            |            |      |
| ttt<br>Phe | gaa<br>Glu | ata<br>Ile | aag<br>Lys | aaa<br>Lys | ctg<br>Leu | tgg<br>Trp | gag<br>Glu | caa<br>Gln | acc<br>Thr | cat<br>His | tcc<br>Ser | aaa<br>Lys | gct<br>Ala   | gga<br>Gly | ctg<br>Leu | 1957 |
|            | 575        |            |            |            |            | 580        |            |            |            |            | 585        |            |              |            |            |      |
| ctg<br>Leu | gtc<br>Val | tcc<br>Ser | gac<br>Asp | gga<br>Gly | ggc<br>Gly | cca<br>Pro | aat<br>Asn | tta<br>Leu | tac<br>Tyr | aac<br>Asn | att<br>Ile | aga<br>Arg | aat<br>Asn   | ctc<br>Leu | cac<br>His | 2005 |
| 590        |            |            |            |            | 595        |            |            |            |            | 600        |            |            |              |            | 605        |      |
| att<br>Ile | cct<br>Pro | gaa<br>Glu | gtc<br>Val | tgc<br>Cys | ttg<br>Leu | aaa<br>Lys | tgg<br>Trp | gaa<br>Glu | tta<br>Leu | atg<br>Met | gat<br>Asp | gag<br>Glu | gat<br>Asp   | tac<br>Tyr | cag<br>Gln | 2053 |
|            |            |            |            | 610        |            |            |            |            | 615        |            |            |            |              | 620        |            |      |
| ggg<br>Gly | cgt<br>Arg | tta<br>Leu | tgc<br>Cys | aac<br>Asn | cca<br>Pro | ctg<br>Leu | aac<br>Asn | cca<br>Pro | ttt<br>Phe | gtc<br>Val | aac<br>Asn | cat<br>His | aaa<br>Lys   | gac<br>Asp | att<br>Ile | 2101 |
|            |            |            | 625        |            |            |            |            | 630        |            |            |            |            | 635          |            |            |      |
| gaa<br>Glu | tca<br>Ser | gtg<br>Val | aac<br>Asn | aat<br>Asn | gca<br>Ala | gtg<br>Val | ata<br>Ile | atg<br>Met | cca<br>Pro | gca<br>Ala | cat<br>His | ggg<br>Gly | cca<br>Pro   | gcc<br>Ala | aaa<br>Lys | 2149 |
|            |            | 640        |            |            |            |            | 645        |            |            |            |            | 650        |              |            |            |      |
| aac<br>Asn | atg<br>Met | gag<br>Glu | tat<br>Tyr | gat<br>Asp | gct<br>Ala | gtt<br>Val | gca<br>Ala | aca<br>Thr | aca<br>Thr | cac<br>His | tcc<br>Ser | tgg<br>Trp | atc<br>Ile   | ccc<br>Pro | aaa<br>Lys | 2197 |
|            | 655        |            |            |            |            | 660        |            |            |            |            | 665        |            |              |            |            |      |
| aga<br>Arg | aat<br>Asn | cga<br>Arg | tcc<br>Ser | atc<br>Ile | ttg<br>Leu | aat<br>Asn | aca<br>Thr | agc<br>Ser | caa<br>Gln | aga<br>Arg | gga<br>Gly | ata<br>Ile | ctt<br>Leu   | gaa<br>Glu | gat<br>Asp | 2245 |
| 670        |            |            |            |            | 675        |            |            |            |            | 680        |            |            |              |            | 685        |      |
| gaa<br>Glu | caa<br>Gln | atg<br>Met | tac<br>Tyr | caa<br>Gln | aag<br>Lys | tgc<br>Cys | tgc<br>Cys | aac<br>Asn | tta<br>Leu | ttt<br>Phe | gaa<br>Glu | aaa<br>Lys | ttc<br>Phe   | ttc<br>Phe | ccc<br>Pro | 2293 |
|            |            |            |            | 690        |            |            |            |            | 695        |            |            |            |              | 700        |            |      |
| agc<br>Ser | agt<br>Ser | tca<br>Ser | tac<br>Tyr | aga<br>Arg | aga<br>Arg | cca<br>Pro | gtc<br>Val | ggg<br>Gly | ata<br>Ile | tcc<br>Ser | agt<br>Ser | atg<br>Met | gtg<br>Val   | gag<br>Glu | gct<br>Ala | 2341 |
|            |            |            | 705        |            |            |            |            | 710        |            |            |            |            | 715          |            |            |      |
| atg<br>Met | gtt<br>Val | tcc<br>Ser | aga<br>Arg | gcc<br>Ala | cga<br>Arg | att<br>Ile | gat<br>Asp | gca<br>Ala | cga<br>Arg | att<br>Ile | gat<br>Asp | ttc<br>Phe | gaa<br>Glu   | tct<br>Ser | gga<br>Gly | 2389 |
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| agg<br>Arg | ata<br>Ile | aag<br>Lys | aaa<br>Lys | gag<br>Glu | gag<br>Glu | ttc<br>Phe | act<br>Thr | gag<br>Glu | atc<br>Ile | atg<br>Met | aag<br>Lys | atc<br>Ile | tgt<br>Cys</ |            |            |      |

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 750 755

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| Met | Asp | Val | Asn | Pro | Thr | Leu | Leu | Phe | Leu | Lys | Val | Pro | Ala | Gln | Asn | 1   | 5   | 10  | 15  |
| Ala | Ile | Ser | Thr | Thr | Phe | Pro | Tyr | Thr | Gly | Asp | Pro | Pro | Tyr | Ser | His | 20  | 25  | 30  |     |
| Gly | Thr | Gly | Thr | Gly | Tyr | Thr | Met | Asp | Thr | Val | Asn | Arg | Thr | His | Gln | 35  | 40  | 45  |     |
| Tyr | Ser | Glu | Lys | Gly | Lys | Trp | Thr | Thr | Asn | Thr | Glu | Thr | Gly | Ala | Pro | 50  | 55  | 60  |     |
| Gln | Leu | Asn | Pro | Ile | Asp | Gly | Pro | Leu | Pro | Glu | Asp | Asn | Glu | Pro | Ser | 65  | 70  | 75  | 80  |
| Gly | Tyr | Ala | Gln | Thr | Asp | Cys | Val | Leu | Glu | Ala | Met | Ala | Phe | Leu | Glu | 85  | 90  | 95  |     |
| Glu | Ser | His | Pro | Gly | Ile | Phe | Glu | Asn | Ser | Cys | Leu | Glu | Thr | Met | Glu | 100 | 105 | 110 |     |
| Val | Val | Gln | Gln | Thr | Arg | Val | Asp | Lys | Leu | Thr | Gln | Gly | Arg | Gln | Thr | 115 | 120 | 125 |     |
| Tyr | Asp | Trp | Thr | Leu | Asn | Arg | Asn | Gln | Pro | Ala | Ala | Thr | Ala | Leu | Ala | 130 | 135 | 140 |     |
| Asn | Thr | Ile | Glu | Val | Phe | Arg | Ser | Asn | Gly | Leu | Thr | Ala | Asn | Glu | Ser | 145 | 150 | 155 | 160 |
| Gly | Arg | Leu | Ile | Asp | Phe | Leu | Lys | Asp | Val | Met | Glu | Ser | Met | Asp | Lys | 165 | 170 | 175 |     |

Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg Arg Val Arg  
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 Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile Gly Lys Lys  
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| aaccatttga | atg | gat | gtc | aat | ccg | act | tta   | ctt | ttc | tta | aaa | gtg | cca |     | 229 |     |
|            | Met | Asp | Val | Asn | Pro | Thr | Leu   | Leu | Phe | Leu | Lys | Val | Pro |     |     |     |
|            | 1   |     |     |     | 5   |     |       |     |     | 10  |     |     |     |     |     |     |
| gca        | caa | aat | gct | ata | agc | aca | act   | ttc | cct | tat | act | gga | gac | cct | cct | 277 |
| Ala        | Gln | Asn | Ala | Ile | Ser | Thr | Thr   | Phe | Pro | Tyr | Thr | Gly | Asp | Pro | Pro |     |
|            | 15  |     |     |     | 20  |     |       |     |     | 25  |     |     |     |     |     |     |
| tac        | agc | cat | ggg | aca | gga | aca | gga   | tac | acc | atg | gat | act | gtc | aac | agg | 325 |
| Tyr        | Ser | His | Gly | Thr | Gly | Thr | Gly   | Tyr | Thr | Met | Asp | Thr | Val | Asn | Arg |     |
|            | 30  |     |     |     | 35  |     |       |     | 40  |     |     |     |     |     | 45  |     |
| aca        | cat | cag | tac | tca | gaa | agg | gga   | aga | tgg | aca | aca | aac | acc | gaa | act | 373 |
| Thr        | His | Gln | Tyr | Ser | Glu | Arg | Gly   | Arg | Trp | Thr | Thr | Asn | Thr | Glu | Thr |     |
|            |     |     |     | 50  |     |     |       |     | 55  |     |     |     |     | 60  |     |     |
| gga        | gca | ccg | caa | ctc | aac | ccg | att   | gat | ggg | cca | ctg | cca | gaa | gac | aat | 421 |
| Gly        | Ala | Pro | Gln | Leu | Asn | Pro | Ile   | Asp | Gly | Pro | Leu | Pro | Glu | Asp | Asn |     |
|            |     |     | 65  |     |     |     |       | 70  |     |     |     |     | 75  |     |     |     |
| gaa        | cca | agt | ggt | tat | gcc | caa | aca   | gat | tgt | gta | ttg | gaa | gca | atg | gcc | 469 |
| Glu        | Pro | Ser | Gly | Tyr | Ala | Gln | Thr   | Asp | Cys | Val | Leu | Glu | Ala | Met | Ala |     |
|            |     | 80  |     |     |     |     | 85    |     |     |     |     | 90  |     |     |     |     |
| ttc        | ctt | gag | gaa | tcc | cat | cct | ggt   | atc | ttt | gag | acc | tcg | tgt | ctt | gaa | 517 |
| Phe        | Leu | Glu | Glu | Ser | His | Pro | Gly   | Ile | Phe | Glu | Thr | Ser | Cys | Leu | Glu |     |
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| acg        | atg | gag | gtt | gtt | cag | caa | aca   | cga | gtg | gac | aag | ctg | aca | caa | ggc | 565 |
| Thr        | Met | Glu | Val | Val | Gln | Gln | Thr   | Arg | Val | Asp | Lys | Leu | Thr | Gln | Gly |     |
|            | 110 |     |     |     | 115 |     |       |     |     | 120 |     |     |     |     | 125 |     |
| cga        | cag | acc | tat | gac | tgg | act | cta   | aat | agg | aac | cag | cct | gct | gca | aca | 613 |
| Arg        | Gln | Thr | Tyr | Asp | Trp | Thr | Leu   | Asn | Arg | Asn | Gln | Pro | Ala | Ala | Thr |     |
|            |     |     |     | 130 |     |     |       |     | 135 |     |     |     |     | 140 |     |     |
| gca        | ttg | gcc | aac | aca | ata | gaa | gtg   | ttc | aga | tca | aat | ggc | ctc | acg | gcc | 661 |
| Ala        | Leu | Ala | Asn | Thr | Ile | Glu | Val   | Phe | Arg | Ser | Asn | Gly | Leu | Thr | Ala |     |
|            |     |     | 145 |     |     |     |       | 150 |     |     |     |     | 155 |     |     |     |
| aat        | gaa | tct | gga | agg | ctc | ata | gac   | ttc | ctt | aag | gat | gta | atg | gag | tca | 709 |
| Asn        | Glu | Ser | Gly | Arg | Leu | Ile | Asp   | Phe | Leu | Lys | Asp | Val | Met | Glu | Ser |     |
|            |     | 160 |     |     |     |     | 165   |     |     |     |     | 170 |     |     |     |     |
| atg        | aac | aaa | gaa | gaa | atg | gag | atc   | aca | act | cat | ttt | cag | aga | aag | aga | 757 |
| Met        | Asn | Lys | Glu | Glu | Met | Glu | Ile   | Thr | Thr | His | Phe | Gln | Arg | Lys | Arg |     |
|            | 175 |     |     |     |     | 180 |       |     |     |     | 185 |     |     |     |     |     |
| cga        | gtg | aga | gac | aat | atg | act | aag   | aaa | atg | gtg | aca | cag | aga | aca | ata | 805 |
| Arg        | Val | Arg | Asp | Asn | Met | Thr | Lys   | Lys | Met | Val | Thr | Gln | Arg | Thr | Ile |     |
|            | 190 |     |     |     | 195 |     |       |     |     | 200 |     |     |     |     | 205 |     |
| ggt        | aaa | agg | aag | cag | aga | ttg | aac</ |     |     |     |     |     |     |     |     |     |

|                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |      |
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| gtg<br>Val        | agg<br>Arg        | aag<br>Lys        | atg<br>Met        | atg<br>Met<br>290 | acg<br>Thr        | aac<br>Asn        | tca<br>Ser        | caa<br>Gln        | gac<br>Asp<br>295 | act<br>Thr        | gag<br>Glu        | ctc<br>Leu        | tct<br>Ser        | ttc<br>Phe<br>300 | aca<br>Thr        | 1093 |
| atc<br>Ile        | acc<br>Thr        | gga<br>Gly        | gac<br>Asp<br>305 | aat<br>Asn        | acc<br>Thr        | aaa<br>Lys        | tgg<br>Trp        | aat<br>Asn<br>310 | gag<br>Glu        | aac<br>Asn        | caa<br>Gln        | aac<br>Asn        | ccc<br>Pro<br>315 | cga<br>Arg        | atg<br>Met        | 1141 |
| ttc<br>Phe        | ctg<br>Leu        | gca<br>Ala<br>320 | atg<br>Met        | ata<br>Ile        | aca<br>Thr        | tac<br>Tyr        | atc<br>Ile<br>325 | aca<br>Thr        | aga<br>Arg        | aac<br>Asn        | caa<br>Gln        | cct<br>Pro<br>330 | gag<br>Glu        | tgg<br>Trp        | ttt<br>Phe        | 1189 |
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| agg<br>Arg<br>350 | cta<br>Leu        | ggg<br>Gly        | aaa<br>Lys        | ggg<br>Gly<br>355 | tac<br>Tyr        | atg<br>Met        | ttc<br>Phe        | gaa<br>Glu        | agc<br>Ser<br>360 | aaa<br>Lys        | agc<br>Ser        | atg<br>Met        | aag<br>Lys        | ctc<br>Leu        | cga<br>Arg<br>365 | 1285 |
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| aat<br>Asn        | gaa<br>Glu        | cca<br>Pro        | aca<br>Thr<br>385 | agg<br>Arg        | aag<br>Lys        | aaa<br>Lys        | atc<br>Ile        | gag<br>Glu<br>390 | aaa<br>Lys        | ata<br>Ile        | agg<br>Arg        | cct<br>Pro        | ctc<br>Leu<br>395 | ata<br>Ile        | ata<br>Ile        | 1381 |
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|  |      |
|--|------|
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| gca aca gcc caa atg gct ctc caa tta ttc atc aag gac tac aga tat    | 1861 |
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| aca tac agg tgt cac agg gga gac aca caa atc caa acg agg agg tca    | 1909 |
| Thr Tyr Arg Cys His Arg Gly Asp Thr Gln Ile Gln Thr Arg Arg Ser    |      |
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| ttc gag cta aag aag ctg tgg gag cag acc cgc tca aag gca gga ctg    | 1957 |
| Phe Glu Leu Lys Lys Leu Trp Glu Gln Thr Arg Ser Lys Ala Gly Leu    |      |
| 575 580 585  |      |
| ttg gtt tca gat ggc gga cca aac ctg tac aac att cgg aat ctc cac    | 2005 |
| Leu Val Ser Asp Gly Gly Pro Asn Leu Tyr Asn Ile Arg Asn Leu His    |      |
| 590 595 600 605  |      |
| atc ccg gaa gtt tgc ctg aaa tgg gaa cta atg gat gaa gac tat cag    | 2053 |
| Ile Pro Glu Val Cys Leu Lys Trp Glu Leu Met Asp Glu Asp Tyr Gln    |      |
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| Gly Arg Leu Cys Asn Pro Met Asn Pro Phe Val Ser His Lys Glu Ile    |      |
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| gaa tct gta aac aat gct gcg gta atg cca gcc cat ggt cca gcc aaa    | 2149 |
| Glu Ser Val Asn Asn Ala Ala Val Met Pro Ala His Gly Pro Ala Lys    |      |
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| agc atg gaa tat gat gct gtg gca act aca cac tct tgg atc cct aag    | 2197 |
| Ser Met Glu Tyr Asp Ala Val Ala Thr Thr His Ser Trp Ile Pro Lys    |      |
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| Arg Asn Arg Ser Ile Leu Asn Thr Ser Gln Arg Gly Ile Leu Glu Asp    |      |
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| gaa caa atg tac cag aag tgt tgc aac cta ttc gag aaa ttc ttc cct    | 2293 |
| Glu Gln Met Tyr Gln Lys Cys Cys Asn Leu Phe Glu Lys Phe Phe Pro    |      |
| 690 695 700  |      |
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| Ser Ser Ser Tyr Arg Arg Pro Val Gly Ile Ser Ser Met Val Glu Ala    |      |
| 705 710 715  |      |
| atg gtg tct agg gcc cgg att gat gca cga att gac ttc gag tct gga    | 2389 |
| Met Val Ser Arg Ala Arg Ile Asp Ala Arg Ile Asp Phe Glu Ser Gly    |      |
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| agg att aag aag gaa gag ttt gct gag atc atg aag atc tgt tcc acc    | 2437 |
| Arg Ile Lys Lys Glu Glu Phe Ala Glu Ile Met Lys Ile Cys Ser Thr    |      |
| 735 740 745  |      |
| att gaa gag ctc aga cgg caa aaa tagtgaattt agcttgctct tcatgaaaaa   | 2491 |
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| 1     |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |  |  |
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|       | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |  |  |
| Gln   | Leu | Asn | Pro | Ile | Asp | Gly | Pro | Leu | Pro | Glu | Asp | Asn | Glu | Pro | Ser |  |  |
| 65    |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |  |  |
| Gly   | Tyr | Ala | Gln | Thr | Asp | Cys | Val | Leu | Glu | Ala | Met | Ala | Phe | Leu | Glu |  |  |
|       |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |  |  |
| Glu   | Ser | His | Pro | Gly | Ile | Phe | Glu | Thr | Ser | Cys | Leu | Glu | Thr | Met | Glu |  |  |
|       |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |  |  |
| Val   | Val | Gln | Gln | Thr | Arg | Val | Asp | Lys | Leu | Thr | Gln | Gly | Arg | Gln | Thr |  |  |
|       |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |  |  |
| Tyr   | Asp | Trp | Thr | Leu | Asn | Arg | Asn | Gln | Pro | Ala | Ala | Thr | Ala | Leu | Ala |  |  |
|       | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |  |  |
| Asn   | Thr | Ile | Glu | Val | Phe | Arg | Ser | Asn | Gly | Leu | Thr | Ala | Asn | Glu | Ser |  |  |
| 145   |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |  |  |
| Gly   | Arg | Leu | Ile | Asp | Phe | Leu | Lys | Asp | Val | Met | Glu | Ser | Met | Asn | Lys |  |  |
|       |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |  |  |
| Glu   | Glu | Met | Glu | Ile | Thr | Thr | His | Phe | Gln | Arg | Lys | Arg | Arg | Val | Arg |  |  |
|       |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |  |
| Asp   | Asn | Met | Thr | Lys | Lys | Met | Val | Thr | Gln | Arg | Thr | Ile | Gly | Lys | Arg |  |  |
|       |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |  |
| Lys   | Gln | Arg | Leu | Asn | Lys | Arg | Ser | Tyr | Leu | Ile | Arg | Ala | Leu | Thr | Leu |  |  |
|       | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |  |

|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Asn<br>225 | Thr        | Met        | Thr        | Lys        | Asp<br>230 | Ala        | Glu        | Arg        | Gly        | Lys<br>235 | Leu        | Lys        | Arg        | Arg        | Ala<br>240 |
| Ile        | Ala        | Thr        | Pro        | Gly<br>245 | Met        | Gln        | Ile        | Arg        | Gly<br>250 | Phe        | Val        | Tyr        | Phe        | Val<br>255 | Glu        |
| Thr        | Leu        | Ala        | Arg<br>260 | Ser        | Ile        | Cys        | Glu        | Lys<br>265 | Leu        | Glu        | Gln        | Ser        | Gly<br>270 | Leu        | Pro        |
| Val        | Gly        | Gly<br>275 | Asn        | Glu        | Lys        | Lys        | Ala<br>280 | Lys        | Leu        | Ala        | Asn        | Val<br>285 | Val        | Arg        | Lys        |
| Met        | Met<br>290 | Thr        | Asn        | Ser        | Gln        | Asp<br>295 | Thr        | Glu        | Leu        | Ser        | Phe<br>300 | Thr        | Ile        | Thr        | Gly        |
| Asp<br>305 | Asn        | Thr        | Lys        | Trp        | Asn<br>310 | Glu        | Asn        | Gln        | Asn        | Pro<br>315 | Arg        | Met        | Phe        | Leu        | Ala<br>320 |
| Met        | Ile        | Thr        | Tyr        | Ile<br>325 | Thr        | Arg        | Asn        | Gln        | Pro<br>330 | Glu        | Trp        | Phe        | Arg        | Asn<br>335 | Val        |
| Leu        | Ser        | Ile        | Ala<br>340 | Pro        | Ile        | Met        | Phe        | Ser<br>345 | Asn        | Lys        | Met        | Ala        | Arg<br>350 | Leu        | Gly        |
| Lys        | Gly        | Tyr<br>355 | Met        | Phe        | Glu        | Ser        | Lys<br>360 | Ser        | Met        | Lys        | Leu        | Arg<br>365 | Thr        | Gln        | Ile        |
| Pro        | Ala<br>370 | Glu        | Met        | Leu        | Ala        | Ser<br>375 | Ile        | Asp        | Leu        | Lys        | Tyr<br>380 | Phe        | Asn        | Glu        | Pro        |
| Thr<br>385 | Arg        | Lys        | Lys        | Ile        | Glu<br>390 | Lys        | Ile        | Arg        | Pro        | Leu<br>395 | Ile        | Ile        | Asp        | Gly        | Thr<br>400 |
| Ala        | Ser        | Leu        | Ser        | Pro<br>405 | Gly        | Met        | Met        | Met        | Gly<br>410 | Met        | Phe        | Asn        | Met        | Leu        | Ser        |
| Thr        | Val        | Leu        | Gly<br>420 | Val        | Ser        | Ile        | Leu        | Asn<br>425 | Leu        | Gly        | Gln        | Lys        | Arg<br>430 | Tyr        | Thr        |
| Lys        | Thr        | Thr<br>435 | Tyr        | Trp        | Trp        | Asp        | Gly<br>440 | Leu        | Gln        | Ser        | Ser        | Asp<br>445 | Asp        | Phe        | Ala        |
| Leu        | Ile<br>450 | Val        | Asn        | Ala        | Pro        | Asn<br>455 | His        | Glu        | Gly        | Ile        | Gln<br>460 | Ala        | Gly        | Val        | Asp        |
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| Tyr        | Arg        | Tyr<br>500 | Gly        | Phe        | Val        | Ala        | Asn<br>505 | Phe        | Ser        | Met        | Glu        | Leu        | Pro<br>510 | Ser        | Phe        |
| Gly        | Val        | Ser<br>515 | Gly        | Ile        | Asn        | Glu        | Ser<br>520 | Ala        | Asp        | Met        | Ser        | Ile<br>525 | Gly        | Val        | Thr        |
| Val        | Ile<br>530 | Lys        | Asn        | Asn        | Met        | Ile<br>535 | Asn        | Asn        | Asp        | Leu        | Gly<br>540 | Pro        | Ala        | Thr        | Ala        |
| Gln<br>545 | Met        | Ala        | Leu        | Gln        | Leu<br>550 | Phe        | Ile        | Lys        | Asp        | Tyr<br>555 | Arg        | Tyr        | Thr        | Tyr        | Arg<br>560 |
| Cys        | His        | Arg        | Gly        | Asp<br>565 | Thr        | Gln        | Ile        | Gln        | Thr<br>570 | Arg        | Arg        | Ser        | Phe        | Glu<br>575 | Leu        |

Lys Lys Leu Trp Glu Gln Thr Arg Ser Lys Ala Gly Leu Leu Val Ser  
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Asp Gly Gly Pro Asn Leu Tyr Asn Ile Arg Asn Leu His Ile Pro Glu  
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Val Cys Leu Lys Trp Glu Leu Met Asp Glu Asp Tyr Gln Gly Arg Leu  
610 615 620

Cys Asn Pro Met Asn Pro Phe Val Ser His Lys Glu Ile Glu Ser Val  
625 630 635 640

Asn Asn Ala Ala Val Met Pro Ala His Gly Pro Ala Lys Ser Met Glu  
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Tyr Asp Ala Val Ala Thr Thr His Ser Trp Ile Pro Lys Arg Asn Arg  
660 665 670

Ser Ile Leu Asn Thr Ser Gln Arg Gly Ile Leu Glu Asp Glu Gln Met  
675 680 685

Tyr Gln Lys Cys Cys Asn Leu Phe Glu Lys Phe Phe Pro Ser Ser Ser  
690 695 700

Tyr Arg Arg Pro Val Gly Ile Ser Ser Met Val Glu Ala Met Val Ser  
705 710 715 720

Arg Ala Arg Ile Asp Ala Arg Ile Asp Phe Glu Ser Gly Arg Ile Lys  
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aaccatttga atg gat gtc aat ccg act tta ctt ttc tta aaa gtg cca 229  
Met Asp Val Asn Pro Thr Leu Leu Phe Leu Lys Val Pro  
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Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro  
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Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg  
30 35 40 45

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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
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| Thr | His | Gln | Tyr | Ser | Glu | Arg | Gly | Arg | Trp | Thr | Thr | Asn | Thr | Glu | Thr |     |
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| Gly | Ala | Pro | Gln | Leu | Asn | Pro | Ile | Asp | Gly | Pro | Leu | Pro | Glu | Asp | Asn |     |
|     |     |     | 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |
| gaa | cca | agt | ggt | tat | gcc | caa | aca | gat | tgt | gta | ttg | gaa | gca | atg | gcc | 469 |
| Glu | Pro | Ser | Gly | Tyr | Ala | Gln | Thr | Asp | Cys | Val | Leu | Glu | Ala | Met | Ala |     |
|     |     | 80  |     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     |
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| Phe | Leu | Glu | Glu | Ser | His | Pro | Gly | Ile | Phe | Glu | Thr | Ser | Cys | Leu | Glu |     |
|     | 95  |     |     |     |     | 100 |     |     |     |     | 105 |     |     |     |     |     |
| acg | atg | gag | gtt | gtt | cag | caa | aca | cga | gtg | gac | aag | ctg | aca | caa | ggc | 565 |
| Thr | Met | Glu | Val | Val | Gln | Gln | Thr | Arg | Val | Asp | Lys | Leu | Thr | Gln | Gly |     |
| 110 |     |     |     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |
| cga | cag | acc | tat | gac | tgg | act | cta | aat | agg | aac | cag | cct | gct | gca | aca | 613 |
| Arg | Gln | Thr | Tyr | Asp | Trp | Thr | Leu | Asn | Arg | Asn | Gln | Pro | Ala | Ala | Thr |     |
|     |     |     |     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |
| gca | ttg | gcc | aac | aca | ata | gaa | gtg | ttc | aga | tca | aat | ggc | ctc | acg | gcc | 661 |
| Ala | Leu | Ala | Asn | Thr | Ile | Glu | Val | Phe | Arg | Ser | Asn | Gly | Leu | Thr | Ala |     |
|     |     |     | 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |
| aat | gaa | tct | gga | agg | ctc | ata | gac | ttc | ctt | aag | gat | gta | atg | gag | tca | 709 |
| Asn | Glu | Ser | Gly | Arg | Leu | Ile | Asp | Phe | Leu | Lys | Asp | Val | Met | Glu | Ser |     |
|     |     | 160 |     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     |
| atg | aac | aaa | gaa | gaa | atg | gag | atc | aca | act | cat | ttt | cag | aga | aag | aga | 757 |
| Met | Asn | Lys | Glu | Glu | Met | Glu | Ile | Thr | Thr | His | Phe | Gln | Arg | Lys | Arg |     |
|     | 175 |     |     |     |     | 180 |     |     |     |     | 185 |     |     |     |     |     |
| cga | gtg | aga | gac | aat | atg | act | aag | aaa | atg | gtg | aca | cag | aga | aca | ata | 805 |
| Arg | Val | Arg | Asp | Asn | Met | Thr | Lys | Lys | Met | Val | Thr | Gln | Arg | Thr | Ile |     |
| 190 |     |     |     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |
| ggt | aaa | agg | aag | cag | aga | ttg | aac | aaa | agg | agt | tat | cta | att | agg | gca | 853 |
| Gly | Lys | Arg | Lys | Gln | Arg | Leu | Asn | Lys | Arg | Ser | Tyr | Leu | Ile | Arg | Ala |     |
|     |     |     |     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |
| tta | acc | ctg | aac | aca | atg | acc | aaa | gat | gct | gag | aga | ggg | aag | cta | aaa | 901 |
| Leu | Thr | Leu | Asn | Thr | Met | Thr | Lys | Asp | Ala | Glu | Arg | Gly | Lys | Leu | Lys |     |
|     |     |     | 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |
| cgg | aga | gca | att | gca | aca | cca | ggg | atg | cag | atc | aga | ggg | ttt | gtg | tac | 949 |
| Arg | Arg | Ala | Ile | Ala | Thr | Pro | Gly | Met | Gln | Ile | Arg | Gly | Phe | Val | Tyr |     |
|     |     | 240 |     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     |
| ttt | gtt | gag | aca | ctg | gcg | aga | agc | att | tgc | gag | aag | ctt | gaa | cag | tct | 9   |



atc acc gga gac aat acc aaa tgg aat gag aac caa aac ccc cga atg 1141  
 Ile Thr Gly Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met  
 305 310 315  
 ttc ctg gca atg ata aca tac atc aca aga aac caa cct gag tgg ttt 1189  
 Phe Leu Ala Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe  
 320 325 330  
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 Arg Asn Val Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala  
 335 340 345  
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 Arg Leu Gly Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Leu Arg  
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 Thr Gln Ile Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe  
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 Asn Glu Pro Thr Arg Lys Lys Ile Glu Lys Ile Arg Pro Leu Ile Ile  
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 575 580 585

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 Leu Val Ser Asp Gly Gly Pro Asn Leu Tyr Asn Ile Arg Asn Leu His  
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 cgacaaacaa cagataaaac gaaaggcca gtctttcgac tgagcctttc gttttatttg 4951  
 atgcctggca gttccctact ctgcgatgg gagacccac actaccatcg gcgctacggc 5011  
 gtttcacttc tgagttcggc atgggggtcag gtgggaccac cgcgctactg ccgccaggca 5071

10073377 020802  
 200020 1255200

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 Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr Gly Ala Pro  
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 Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn Glu Pro Ser  
 65 70 75 80  
 Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala Phe Leu Glu  
 85 90 95  
 Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu Thr Met Glu  
 100 105 110  
 Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly Arg Gln Thr  
 115 120 125  
 Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr Ala Leu Ala  
 130 135 140  
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 145 150 155 160  
 Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser Met Asn Lys  
 165 170 175  
 Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg Arg Val Arg  
 180 185 190  
 Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile Gly Lys Arg  
 195 200 205  
 Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala Leu Thr Leu  
 210 215 220  
 Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys Arg Arg Ala  
 225 230 235 240  
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 245 250 255  
 Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser Gly Leu Pro  
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 Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val Val Arg Lys  
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10073377-020802

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|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Asp<br>305 | Asn        | Thr        | Lys        | Trp        | Asn<br>310 | Glu        | Asn        | Gln        | Asn        | Pro<br>315 | Arg        | Met        | Phe        | Leu<br>320 |
| Met        | Ile        | Thr        | Tyr        | Ile<br>325 | Thr        | Arg        | Asn        | Gln        | Pro<br>330 | Glu        | Trp        | Phe        | Arg        | Asn<br>335 |
| Leu        | Ser        | Ile        | Ala<br>340 | Pro        | Ile        | Met        | Phe        | Ser<br>345 | Asn        | Lys        | Met        | Ala        | Arg<br>350 | Leu<br>355 |
| Lys        | Gly        | Tyr        | Met<br>355 | Phe        | Glu        | Ser        | Lys<br>360 | Ser        | Met        | Lys        | Leu        | Arg<br>365 | Thr        | Gln<br>370 |
| Pro        | Ala<br>370 | Glu        | Met        | Leu        | Ala        | Ser<br>375 | Ile        | Asp        | Leu        | Lys        | Tyr<br>380 | Phe        | Asn        | Glu<br>385 |
| Thr<br>385 | Arg        | Lys        | Lys        | Ile        | Glu<br>390 | Lys        | Ile        | Arg        | Pro        | Leu<br>395 | Ile        | Ile        | Asp        | Gly<br>400 |
| Ala        | Ser        | Leu        | Ser        | Pro<br>405 | Gly        | Met        | Met        | Met        | Gly<br>410 | Met        | Phe        | Asn        | Met        | Leu<br>415 |
| Thr        | Val        | Leu        | Gly<br>420 | Val        | Ser        | Ile        | Leu        | Asn<br>425 | Leu        | Gly        | Gln        | Lys        | Arg<br>430 | Tyr<br>435 |
| Lys        | Thr        | Thr        | Tyr<br>435 | Trp        | Trp        | Asp        | Gly<br>440 | Leu        | Gln        | Ser        | Ser        | Asp<br>445 | Asp        | Phe<br>450 |
| Leu        | Ile<br>450 | Val        | Asn        | Ala        | Pro        | Asn<br>455 | His        | Glu        | Gly        | Ile        | Gln<br>460 | Ala        | Gly        | Val<br>465 |
| Arg<br>465 | Phe        | Tyr        | Arg        | Thr        | Cys<br>470 | Lys        | Leu        | Val        | Gly        | Ile<br>475 | Asn        | Met        | Ser        | Lys<br>480 |
| Lys        | Ser        | Tyr        | Ile        | Asn<br>485 | Arg        | Thr        | Gly        | Thr        | Phe<br>490 | Glu        | Phe        | Thr        | Ser        | Phe<br>495 |
| Tyr        | Arg        | Tyr        | Gly<br>500 | Phe        | Val        | Ala        | Asn        | Phe<br>505 | Ser        | Met        | Glu        | Leu        | Pro<br>510 | Ser<br>515 |
| Gly        | Val        | Ser<br>515 | Gly        | Ile        | Asn        | Glu        | Ser<br>520 | Ala        | Asp        | Met        | Ser        | Ile<br>525 | Gly        | Val<br>530 |
| Val<br>530 | Ile        | Lys        | Asn        | Asn        | Met        | Ile<br>535 | Asn        | Asn        | Asp        | Leu        | Gly<br>540 | Pro        | Ala        | Thr<br>545 |
| Gln<br>545 | Met        | Ala        | Leu        | Gln        | Leu<br>550 | Phe        | Ile        | Lys        | Asp        | Tyr<br>555 | Arg        | Tyr        | Thr        | Tyr<br>560 |
| Cys        | His        | Arg        | Gly        | Asp<br>565 | Thr        | Gln        | Ile        | Gln        | Thr<br>570 | Arg        | Arg        | Ser        | Phe        | Glu<br>575 |
| Lys        | Lys        | Leu        | Trp<br>580 | Glu        | Gln        | Thr        | His        | Ser<br>585 | Lys        | Ala        | Gly        | Leu        | Leu<br>590 | Val<br>595 |
| Asp        | Gly        | Gly<br>595 | Pro        | Asn        | Leu        | Tyr        | Asn<br>600 | Ile        | Arg        | Asn        | Leu        | His<br>605 | Ile        | Pro<br>610 |
| Val        | Cys<br>610 | Leu        | Lys        | Trp        | Glu        | Leu<br>615 | Met        | Asp        | Glu        | Asp        | Tyr<br>620 | Gln        | Gly        | Arg<br>625 |
| Cys<br>625 | Asn        | Pro        | Leu        | Asn        | Pro<br>630 | Phe        | Val        | Asn        | His        | Lys<br>635 | Asp        | Ile        | Glu        | Ser<br>640 |

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acaagtggtc gcccgaggta ctggtcgacc tccgaagttg gggggggagcg aaagcaggca 180
aaccatttga atg gat gtc aat ccg act tta ctt ttc tta aaa gtg cca 229
          Met Asp Val Asn Pro Thr Leu Leu Phe Leu Lys Val Pro
           1                    5                      10
gca caa aat gct ata agc aca act ttc cct tat act gga gac cct cct 277
Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro
      15                20                  25
tac agc cat ggg aca gga aca gga tac acc atg gat act gtc aac agg 325
Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg
   30             35               40              45
aca cat cag tac tca gaa agg gga aga tgg aca aca aac acc gaa act 373
Thr His Gln Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr
        50                55                 60
gga gca ccg caa ctc aac ccg att gat ggg cca ctg cca gaa gac aat 421
Gly Ala Pro  Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro  Glu Asp Asn
            65                70              75
gaa cca agt ggt tat gcc caa aca gat tgt gta ttg gaa gca atg gcc 469
Glu Pro Ser Gly Tyr Ala Gln Thr Asp Cys Val Leu  Glu Ala Met Ala
       80                85                90
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| Phe Leu Glu Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu |      |
| 95 100 105  |      |
| acg atg gag gtt gtt cag caa aca cga gtg gac aag ctg aca caa ggc | 565  |
| Thr Met Glu Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly |      |
| 110 115 120 125   |      |
| cga cag acc tat gac tgg act cta aat agg aac cag cct gct gca aca | 613  |
| Arg Gln Thr Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr |      |
| 130 135 140   |      |
| gca ttg gcc aac aca ata gaa gtg ttc aga tca aat ggc ctc acg gcc | 661  |
| Ala Leu Ala Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala |      |
| 145 150 155   |      |
| aat gaa tct gga agg ctc ata gac ttc ctt aag gat gta atg gag tca | 709  |
| Asn Glu Ser Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser |      |
| 160 165 170   |      |
| atg aac aaa gaa gaa atg gag atc aca act cat ttt cag aga aag aga | 757  |
| Met Asn Lys Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg |      |
| 175 180 185   |      |
| cga gtg aga gac aat atg act aag aaa atg gtg aca cag aga aca ata | 805  |
| Arg Val Arg Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile |      |
| 190 195 200 205   |      |
| ggt aaa agg aag cag aga ttg aac aaa agg agt tat cta att agg gca | 853  |
| Gly Lys Arg Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala |      |
| 210 215 220   |      |
| tta acc ctg aac aca atg acc aaa gat gct gag aga ggg aag cta aaa | 901  |
| Leu Thr Leu Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys |      |
| 225 230 235   |      |
| cgg aga gca att gca acc cca ggg atg caa ata agg ggg ttt gta tac | 949  |
| Arg Arg Ala Ile Ala Thr Pro Gly Met Gln Ile Arg Gly Phe Val Tyr |      |
| 240 245 250   |      |
| ttt gtt gag aca cta gca agg agt ata tgt gag aaa ctt gaa caa tca | 997  |
| Phe Val Glu Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser |      |
| 255 260 265   |      |
| gga ttg cca gtt gga ggc aat gag aag aaa gca aag ttg gca aat gtt | 1045 |
| Gly Leu Pro Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val |      |
| 270 275 280 285   |      |
| gta agg aag atg atg acc aat tct cag gac act gaa att tct ttc acc | 1093 |
| Val Arg Lys Met Met Thr Asn Ser Gln Asp Thr Glu Ile Ser Phe Thr |      |
| 290 295 300   |      |
| atc act gga gat aac acc aaa tgg aac gaa aat cag aac cct cgg atg | 1141 |
| Ile Thr Gly Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met |      |
| 305 310 315   |      |
| ttt ttg gcc atg atc aca tat ata acc aga aat cag ccc gaa tgg ttc | 1189 |
| Phe Leu Ala Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe |      |
| 320 325 330   |      |
| aga aat gtt cta agt att gct cca ata atg ttc tca aac aaa atg gcg | 1237 |
| Arg Asn Val Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala |      |
| 335 340 345   |      |

209029-22E222T

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| aga | ctg | gga | aag | ggg | tac | atg | ttt | gag | agc | aag | agt | atg | aaa | att | aga | 1285 |
| Arg | Leu | Gly | Lys | Gly | Tyr | Met | Phe | Glu | Ser | Lys | Ser | Met | Lys | Ile | Arg |      |
| 350 |     |     |     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |      |
| act | caa | ata | cct | gca | gaa | atg | cta | gca | agc | atc | gat | ttg | aaa | tac | ttc | 1333 |
| Thr | Gln | Ile | Pro | Ala | Glu | Met | Leu | Ala | Ser | Ile | Asp | Leu | Lys | Tyr | Phe |      |
|     |     |     |     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |      |
| aat | gat | tca | act | aga | aag | aag | att | gaa | aaa | atc | cgg | ccg | ctc | tta | ata | 1381 |
| Asn | Asp | Ser | Thr | Arg | Lys | Lys | Ile | Glu | Lys | Ile | Arg | Pro | Leu | Leu | Ile |      |
|     |     |     | 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |      |
| gat | ggg | act | gca | tca | ttg | agc | cct | gga | atg | atg | atg | ggc | atg | ttc | aat | 1429 |
| Asp | Gly | Thr | Ala | Ser | Leu | Ser | Pro | Gly | Met | Met | Met | Gly | Met | Phe | Asn |      |
|     |     | 400 |     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |      |
| atg | tta | agt | act | gta | tta | ggc | gtc | tcc | atc | ctg | aat | ctt | gga | caa | aag | 1477 |
| Met | Leu | Ser | Thr | Val | Leu | Gly | Val | Ser | Ile | Leu | Asn | Leu | Gly | Gln | Lys |      |
|     | 415 |     |     |     |     | 420 |     |     |     |     | 425 |     |     |     |     |      |
| aga | cac | acc | aag | act | act | tac | tgg | tgg | gat | ggc | ctt | caa | tct | tct | gat | 1525 |
| Arg | His | Thr | Lys | Thr | Thr | Tyr | Trp | Trp | Asp | Gly | Leu | Gln | Ser | Ser | Asp |      |
| 430 |     |     |     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |      |
| gat | ttt | gct | ctg | att | gtg | aat | gca | ccc | aat | cat | gaa | ggg | att | caa | gcc | 1573 |
| Asp | Phe | Ala | Leu | Ile | Val | Asn | Ala | Pro | Asn | His | Glu | Gly | Ile | Gln | Ala |      |
|     |     |     |     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |      |
| gga | gtc | aac | agg | ttt | tat | cga | acc | tgt | aag | cta | ctt | gga | att | aat | atg | 1621 |
| Gly | Val | Asn | Arg | Phe | Tyr | Arg | Thr | Cys | Lys | Leu | Leu | Gly | Ile | Asn | Met |      |
|     |     |     | 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |      |
| agc | aag | aaa | aag | tct | tac | ata | aac | aga | aca | ggc | aca | ttt | gaa | ttc | aca | 1669 |
| Ser | Lys | Lys | Lys | Ser | Tyr | Ile | Asn | Arg | Thr | Gly | Thr | Phe | Glu | Phe | Thr |      |
|     |     | 480 |     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |      |
| agc | ttt | ttc | tat | cgt | tat | ggg | ttt | ggt | gcc | aat | ttc | agc | atg | gag | ctt | 1717 |
| Ser | Phe | Phe | Tyr | Arg | Tyr | Gly | Phe | Val | Ala | Asn | Phe | Ser | Met | Glu | Leu |      |
|     | 495 |     |     |     |     | 500 |     |     |     |     | 505 |     |     |     |     |      |
| ccc | agc | ttt | ggg | gtg | tct | ggg | atc | aac | gag | tct | gcg | gac | atg | agt | att | 1765 |
| Pro | Ser | Phe | Gly | Val | Ser | Gly | Ile | Asn | Glu | Ser | Ala | Asp | Met | Ser | Ile |      |
| 510 |     |     |     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |      |
| gga | gtt | act | gtc | atc | aaa | aac | aat | atg | ata | aac | aat | gat | ctt | ggc | cca | 1813 |
| Gly | Val | Thr | Val | Ile | Lys | Asn | Asn | Met | Ile | Asn | Asn | Asp | Leu | Gly | Pro |      |
|     |     |     | 530 |     |     |     |     |     | 535 |     |     |     |     | 540 |     |      |
| gca | acc | gct | caa | atg | gcc | ctt | cag | ctg | ttc | atc | aaa | gat | tac | agg | tac | 1861 |
| Ala | Thr | Ala | Gln | Met | Ala | Leu | Gln | Leu | Phe | Ile | Lys | Asp | Tyr | Arg | Tyr |      |
|     |     |     | 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |      |



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<212> PRT

<213> Artificial Sequence

<223> Description of Artificial Sequence: PHL3203

2007337-000001

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Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg Thr His Gln  
35 40 45

Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr Gly Ala Pro  
50 55 60

Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn Glu Pro Ser  
65 70 75 80

Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala Phe Leu Glu  
85 90 95

Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu Thr Met Glu  
100 105 110

Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly Arg Gln Thr  
115 120 125

Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr Ala Leu Ala  
130 135 140

Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala Asn Glu Ser  
145 150 155 160

Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser Met Asn Lys  
165 170 175

Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg Arg Val Arg  
180 185 190

Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile Gly Lys Arg  
195 200 205

Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala Leu Thr Leu  
210 215 220

Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys Arg Arg Ala  
225 230 235 240

Ile Ala Thr Pro Gly Met Gln Ile Arg Gly Phe Val Tyr Phe Val Glu  
245 250 255

Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser Gly Leu Pro  
260 265 270

Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val Val Arg Lys  
275 280 285

Met Met Thr Asn Ser Gln Asp Thr Glu Ile Ser Phe Thr Ile Thr Gly  
290 295 300

Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met Phe Leu Ala  
305 310 315 320

Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe Arg Asn Val  
325 330 335

Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala Arg Leu Gly  
340 345 350

1007337-000000

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Lys | Gly | Tyr | Met | Phe | Glu | Ser | Lys | Ser | Met | Lys | Ile | Arg | Thr | Gln | Ile |  |
|     | 355 |     |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |
| Pro | Ala | Glu | Met | Leu | Ala | Ser | Ile | Asp | Leu | Lys | Tyr | Phe | Asn | Asp | Ser |  |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |  |
| Thr | Arg | Lys | Lys | Ile | Glu | Lys | Ile | Arg | Pro | Leu | Leu | Ile | Asp | Gly | Thr |  |
|     | 385 |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |  |
| Ala | Ser | Leu | Ser | Pro | Gly | Met | Met | Met | Gly | Met | Phe | Asn | Met | Leu | Ser |  |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |  |
| Thr | Val | Leu | Gly | Val | Ser | Ile | Leu | Asn | Leu | Gly | Gln | Lys | Arg | His | Thr |  |
|     |     | 420 |     |     |     |     |     | 425 |     |     |     |     | 430 |     |     |  |
| Lys | Thr | Thr | Tyr | Trp | Trp | Asp | Gly | Leu | Gln | Ser | Ser | Asp | Asp | Phe | Ala |  |
|     | 435 |     |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |  |
| Leu | Ile | Val | Asn | Ala | Pro | Asn | His | Glu | Gly | Ile | Gln | Ala | Gly | Val | Asn |  |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |  |
| Arg | Phe | Tyr | Arg | Thr | Cys | Lys | Leu | Leu | Gly | Ile | Asn | Met | Ser | Lys | Lys |  |
|     | 465 |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |  |
| Lys | Ser | Tyr | Ile | Asn | Arg | Thr | Gly | Thr | Phe | Glu | Phe | Thr | Ser | Phe | Phe |  |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |  |
| Tyr | Arg | Tyr | Gly | Phe | Val | Ala | Asn | Phe | Ser | Met | Glu | Leu | Pro | Ser | Phe |  |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |  |
| Gly | Val | Ser | Gly | Ile | Asn | Glu | Ser | Ala | Asp | Met | Ser | Ile | Gly | Val | Thr |  |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |  |
| Val | Ile | Lys | Asn | Asn | Met | Ile | Asn | Asn | Asp | Leu | Gly | Pro | Ala | Thr | Ala |  |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |  |
| Gln | Met | Ala | Leu | Gln | Leu | Phe | Ile | Lys | Asp | Tyr | Arg | Tyr | Thr | Tyr | Arg |  |
|     | 545 |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |  |
| Cys | His | Arg | Gly | Asp | Thr | Gln | Ile | Gln | Thr | Arg | Arg | Ser | Phe | Glu | Ile |  |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |  |
| Lys | Lys | Leu | Trp | Glu | Gln | Thr | His | Ser | Lys | Ala | Gly | Leu | Leu | Val | Ser |  |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |  |
| Asp | Gly | Gly | Pro | Asn | Leu | Tyr | Asn | Ile | Arg | Asn | Leu | His | Ile | Pro | Glu |  |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |  |
| Val | Cys | Leu | Lys | Trp | Glu | Leu | Met | Asp | Glu | Asp | Tyr | Gln | Gly | Arg | Leu |  |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |  |
| Cys | Asn | Pro | Met | Asn | Pro | Phe | Val | Ser | His | Lys | Glu | Ile | Glu | Ser | Val |  |
|     | 625 |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     | 640 |  |
| Asn | Asn | Ala | Ala | Val | Met | Pro | Ala | His | Gly | Pro | Ala | Lys | Ser | Met | Glu |  |
|     |     |     |     | 645 |     |     |     |     | 650 |     |     |     |     | 655 |     |  |
| Tyr | Asp | Ala | Val | Ala | Thr | Thr | His | Ser | Trp | Ile | Pro | Lys | Arg | Asn | Arg |  |
|     |     |     | 660 |     |     |     |     | 665 |     |     |     |     | 670 |     |     |  |
| Ser | Ile | Leu | Asn | Thr | Ser | Gln | Arg | Gly | Ile |     |     |     |     |     |     |  |

Tyr Arg Arg Pro Val Gly Ile Ser Ser Met Val Glu Ala Met Val Ser  
705 710 715 720

Arg Ala Arg Ile Asp Ala Arg Ile Asp Phe Glu Ser Gly Arg Ile Lys  
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Lys Glu Glu Phe Ala Glu Ile Met Lys Ile Cys Ser Thr Ile Glu Glu  
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aaccatttga atg gat gtc aat ccg act tta ctt ttc tta aaa gtg cca 229  
Met Asp Val Asn Pro Thr Leu Leu Phe Leu Lys Val Pro  
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gca caa aat gct ata agc aca act ttc cct tat act gga gac cct cct 277  
Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro  
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Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg  
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aca cat cag tac tca gaa agg gga aga tgg aca aca aac acc gaa act 373  
Thr His Gln Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr  
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Gly Ala Pro Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn  
65 70 75

gaa cca agt ggt tat gcc caa aca gat tgt gta ttg gaa gca atg gcc 469  
Glu Pro Ser Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala  
80 85 90

ttc ctt gag gaa tcc cat cct ggt atc ttt gag acc tcg tgt ctt gaa 517  
Phe Leu Glu Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu  
95 100 105

acg atg gag gtt gtt cag caa aca cga gtg gac aag ctg aca caa ggc 565  
Thr Met Glu Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly  
110 115 120 125

cga cag acc tat gac tgg act cta aat agg aac cag cct gct gca aca 613  
Arg Gln Thr Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr  
130 135 140

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gca ttg gcc aac aca ata gaa gtg ttc aga tca aat ggc ctc acg gcc 661  
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145 150 155

aat gaa tct gga agg ctc ata gac ttc ctt aag gat gta atg gag tca 709  
Asn Glu Ser Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser  
160 165 170

atg aac aaa gaa gaa atg gag atc aca act cat ttt cag aga aag aga 757  
Met Asn Lys Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg  
175 180 185

cga gtg aga gac aat atg act aag aaa atg gtg aca cag aga aca ata 805  
Arg Val Arg Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile  
190 195 200 205

ggt aaa agg aag cag aga ttg aac aaa agg agt tat cta att agg gca 853  
Gly Lys Arg Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala  
210 215 220

tta acc ctg aac aca atg acc aaa gat gct gag aga ggg aag cta aaa 901  
Leu Thr Leu Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys  
225 230 235

cgg aga gca att gca acc cca ggg atg caa ata agg ggg ttt gta tac 949  
Arg Arg Ala Ile Ala Thr Pro Gly Met Gln Ile Arg Gly Phe Val Tyr  
240 245 250

ttt gtt gag aca cta gca agg agt ata tgt gag aaa ctt gaa caa tca 997  
Phe Val Glu Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser  
255 260 265

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Gly Leu Pro Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val  
270 275 280 285

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Val Arg Lys Met Met Thr Asn Ser Gln Asp Thr Glu Ile Ser Phe Thr  
290 295 300

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305 310 315

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Phe Leu Ala Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe  
320 325 330

aga aat gtt cta agt att gct cca ata atg ttc tca aac aaa atg gcg 1237  
Arg Asn Val Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala  
335 340 345

aga ctg gga aag ggg tac atg ttt gag agc aag agt atg aaa att aga 1285  
Arg Leu Gly Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Ile Arg  
350 355 360 365

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Thr Gln Ile Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe  
370 375 380

aat gat tca act aga aag aag att gaa aaa atc cgg ccg ctc tta ata 1381  
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385 390 395

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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
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| gat | ggg | act | gca | tca | ttg | agc | cct | gga | atg | atg | atg | ggc | atg | ttc | aat | 1429 |
| Asp | Gly | Thr | Ala | Ser | Leu | Ser | Pro | Gly | Met | Met | Met | Gly | Met | Phe | Asn |      |
|     | 400 |     |     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |      |
| atg | tta | agt | act | gta | tta | ggc | gtc | tcc | atc | ctg | aat | ctt | gga | caa | aag | 1477 |
| Met | Leu | Ser | Thr | Val | Leu | Gly | Val | Ser | Ile | Leu | Asn | Leu | Gly | Gln | Lys |      |
|     | 415 |     |     |     |     | 420 |     |     |     |     | 425 |     |     |     |     |      |
| aga | cac | acc | aag | act | act | tac | tgg | tgg | gat | ggg | ctt | caa | tct | tct | gat | 1525 |
| Arg | His | Thr | Lys | Thr | Thr | Tyr | Trp | Trp | Asp | Gly | Leu | Gln | Ser | Ser | Asp |      |
| 430 |     |     |     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |      |
| gat | ttt | gct | ctg | att | gtg | aat | gca | ccc | aat | cat | gaa | ggg | att | caa | gcc | 1573 |
| Asp | Phe | Ala | Leu | Ile | Val | Asn | Ala | Pro | Asn | His | Glu | Gly | Ile | Gln | Ala |      |
|     |     |     |     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |      |
| gga | gtc | aac | agg | ttt | tat | cga | acc | tgt | aag | cta | ctt | gga | att | aat | atg | 1621 |
| Gly | Val | Asn | Arg | Phe | Tyr | Arg | Thr | Cys | Lys | Leu | Leu | Gly | Ile | Asn | Met |      |
|     |     | 465 |     |     |     |     |     | 470 |     |     |     |     | 475 |     |     |      |
| agc | aag | aaa | aag | tct | tac | ata | aac | aga | aca | ggg | aca | ttt | gaa | ttc | aca | 1669 |
| Ser | Lys | Lys | Lys | Ser | Tyr | Ile | Asn | Arg | Thr | Gly | Thr | Phe | Glu | Phe | Thr |      |
|     | 480 |     |     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |      |
| agc | ttt | ttc | tac | cgc | tat | gga | ttt | gta | gcc | aat | ttt | agt | atg | gag | ttg | 1717 |
| Ser | Phe | Phe | Tyr | Arg | Tyr | Gly | Phe | Val | Ala | Asn | Phe | Ser | Met | Glu | Leu |      |
|     | 495 |     |     |     |     | 500 |     |     |     |     | 505 |     |     |     |     |      |
| ccc | agc | ttt | gga | gta | tca | gga | att | aat | gaa | tcg | gct | gat | atg | agc | att | 1765 |
| Pro | Ser | Phe | Gly | Val | Ser | Gly | Ile | Asn | Glu | Ser | Ala | Asp | Met | Ser | Ile |      |
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| gga | gta | aca | gtg | ata | aag | aat | aac | atg | ata | aac | aat | gat | ctt | gga | ccg | 1813 |
| Gly | Val | Thr | Val | Ile | Lys | Asn | Asn | Met | Ile | Asn | Asn | Asp | Leu | Gly | Pro |      |
|     |     |     |     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |      |
| gca | aca | gcc | caa | atg | gct | ctc | caa | tta | ttc | atc | aag | gac | tac | aga | tat | 1861 |
| Ala | Thr | Ala | Gln | Met | Ala | Leu | Gln | Leu | Phe | Ile | Lys | Asp | Tyr | Arg | Tyr |      |
|     |     |     | 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |      |
| aca | tac | agg | tgt | cac | agg | gga | gac | aca | caa | atc | caa | acg | agg | agg | tca | 1909 |
| Thr | Tyr | Arg | Cys | His | Arg | Gly | Asp | Thr | Gln | Ile | Gln | Thr | Arg | Arg | Ser |      |
|     |     | 560 |     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |      |
| ttc | gag | cta | aag | aag | ctg | tgg | gag | cag | acc | cgc | tca | aag | gca | gga | ctg | 1957 |
| Phe | Glu | Leu | Lys | Lys | Leu | Trp | Glu | Gln | Thr | Arg | Ser | Lys | Ala | Gly | Leu |      |
|     | 575 |     |     |     |     | 580 |     |     |     |     | 585 |     |     |     |     |      |
| ttg | gtt | tca | gat | ggc | gga | cca | aac | ctg | tac | aac | att | aga | aat | ctc | cac | 2005 |
| Leu | Val | Ser | Asp | Gly | Gly | Pro | Asn | Leu | Tyr | Asn | Ile | Arg | Asn | Leu | His |      |
| 590 |     |     |     |     | 595 |     |     |     |     | 600 |     |     |     |     | 60  |      |

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 670 675 680 685

gaa caa atg tac caa aag tgc tgc aac tta ttt gaa aaa ttc ttc ccc 2293  
 Glu Gln Met Tyr Gln Lys Cys Cys Asn Leu Phe Glu Lys Phe Phe Pro  
 690 695 700

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 Arg Ile Lys Lys Glu Glu Phe Thr Glu Ile Met Lys Ile Cys Ser Thr  
 735 740 745

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 750 755

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| Met | Asp | Val | Asn | Pro | Thr | Leu | Leu | Phe | Leu | Lys | Val | Pro | Ala | Gln | Asn |
| 1   |     |     |     |     | 5   |     |     |     | 10  |     |     |     |     | 15  |     |
| Ala | Ile | Ser | Thr | Thr | Phe | Pro | Tyr | Thr | Gly | Asp | Pro | Pro | Tyr | Ser | His |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Gly | Thr | Gly | Thr | Gly | Tyr | Thr | Met | Asp | Thr | Val | Asn | Arg | Thr | His | Gln |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Tyr | Ser | Glu | Arg | Gly | Arg | Trp | Thr | Thr | Asn | Thr | Glu | Thr | Gly | Ala | Pro |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Leu | Asn | Pro | Ile | Asp | Gly | Pro | Leu | Pro | Glu | Asp | Asn | Glu | Pro | Ser | 65  | 70  | 75  | 80  |
| Gly | Tyr | Ala | Gln | Thr | Asp | Cys | Val | Leu | Glu | Ala | Met | Ala | Phe | Leu | Glu | 85  | 90  | 95  |     |
| Glu | Ser | His | Pro | Gly | Ile | Phe | Glu | Thr | Ser | Cys | Leu | Glu | Thr | Met | Glu | 100 | 105 | 110 |     |
| Val | Val | Gln | Gln | Thr | Arg | Val | Asp | Lys | Leu | Thr | Gln | Gly | Arg | Gln | Thr | 115 | 120 | 125 |     |
| Tyr | Asp | Trp | Thr | Leu | Asn | Arg | Asn | Gln | Pro | Ala | Ala | Thr | Ala | Leu | Ala | 130 | 135 | 140 |     |
| Asn | Thr | Ile | Glu | Val | Phe | Arg | Ser | Asn | Gly | Leu | Thr | Ala | Asn | Glu | Ser | 145 | 150 | 155 | 160 |
| Gly | Arg | Leu | Ile | Asp | Phe | Leu | Lys | Asp | Val | Met | Glu | Ser | Met | Asn | Lys | 165 | 170 | 175 |     |
| Glu | Glu | Met | Glu | Ile | Thr | Thr | His | Phe | Gln | Arg | Lys | Arg | Arg | Val | Arg | 180 | 185 | 190 |     |
| Asp | Asn | Met | Thr | Lys | Lys | Met | Val | Thr | Gln | Arg | Thr | Ile | Gly | Lys | Arg | 195 | 200 | 205 |     |
| Lys | Gln | Arg | Leu | Asn | Lys | Arg | Ser | Tyr | Leu | Ile | Arg | Ala | Leu | Thr | Leu | 210 | 215 | 220 |     |
| Asn | Thr | Met | Thr | Lys | Asp | Ala | Glu | Arg | Gly | Lys | Leu | Lys | Arg | Arg | Ala | 225 | 230 | 235 | 240 |
| Ile | Ala | Thr | Pro | Gly | Met | Gln | Ile | Arg | Gly | Phe | Val | Tyr | Phe | Val | Glu | 245 | 250 | 255 |     |
| Thr | Leu | Ala | Arg | Ser | Ile | Cys | Glu | Lys | Leu | Glu | Gln | Ser | Gly | Leu | Pro | 260 | 265 | 270 |     |
| Val | Gly | Gly | Asn | Glu | Lys | Lys | Ala | Lys | Leu | Ala | Asn | Val | Val | Arg | Lys | 275 | 280 | 285 |     |
| Met | Met | Thr | Asn | Ser | Gln | Asp | Thr | Glu | Ile | Ser | Phe | Thr | Ile | Thr | Gly | 290 | 295 | 300 |     |
| Asp | Asn | Thr | Lys | Trp | Asn | Glu | Asn | Gln | Asn | Pro | Arg | Met | Phe | Leu | Ala | 305 | 310 | 315 | 320 |
| Met | Ile | Thr | Tyr | Ile | Thr | Arg | Asn | Gln | Pro | Glu | Trp | Phe | Arg | Asn | Val | 325 | 330 | 335 |     |
| Leu | Ser | Ile | Ala | Pro | Ile | Met | Phe | Ser | Asn | Lys | Met | Ala | Arg | Leu | Gly | 340 | 345 | 350 |     |
| Lys | Gly | Tyr | Met | Phe | Glu | Ser | Lys | Ser | Met | Lys | Ile | Arg | Thr | Gln | Ile | 355 | 360 | 365 |     |
| Pro | Ala | Glu | Met | Leu | Ala | Ser | Ile | Asp | Leu | Lys | Tyr | Phe | Asn | Asp | Ser | 370 | 375 | 380 |     |
| Thr | Arg | Lys | Lys | Ile | Glu | Lys | Ile | Arg | Pro | Leu | Leu | Ile | Asp | Gly | Thr | 385 | 390 | 395 | 400 |
| Ala | Ser | Leu | Ser | Pro | Gly | Met | Met | Met | Gly | Met | Phe | Asn | Met | Leu | Ser | 405 | 410 | 415 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|
| Thr | Val | Leu | Gly | Val | Ser | Ile | Leu | Asn | Leu | Gly | Gln | Lys | Arg | His | Thr |  |     |
|     |     |     | 420 |     |     |     |     |     | 425 |     |     |     |     |     |     |  | 430 |
| Lys | Thr | Thr | Tyr | Trp | Trp | Asp | Gly | Leu | Gln | Ser | Ser | Asp | Asp | Phe | Ala |  |     |
|     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |     |  |     |
| Leu | Ile | Val | Asn | Ala | Pro | Asn | His | Glu | Gly | Ile | Gln | Ala | Gly | Val | Asn |  |     |
|     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |  |     |
| Arg | Phe | Tyr | Arg | Thr | Cys | Lys | Leu | Leu | Gly | Ile | Asn | Met | Ser | Lys | Lys |  |     |
| 465 |     |     |     |     | 470 |     |     |     |     | 475 |     |     |     |     | 480 |  |     |
| Lys | Ser | Tyr | Ile | Asn | Arg | Thr | Gly | Thr | Phe | Glu | Phe | Thr | Ser | Phe | Phe |  |     |
|     |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |  |     |
| Tyr | Arg | Tyr | Gly | Phe | Val | Ala | Asn | Phe | Ser | Met | Glu | Leu | Pro | Ser | Phe |  |     |
|     |     |     | 500 |     |     |     |     | 505 |     |     |     |     | 510 |     |     |  |     |
| Gly | Val | Ser | Gly | Ile | Asn | Glu | Ser | Ala | Asp | Met | Ser | Ile | Gly | Val | Thr |  |     |
|     |     | 515 |     |     |     |     | 520 |     |     |     |     | 525 |     |     |     |  |     |
| Val | Ile | Lys | Asn | Asn | Met | Ile | Asn | Asn | Asp | Leu | Gly | Pro | Ala | Thr | Ala |  |     |
|     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |  |     |
| Gln | Met | Ala | Leu | Gln | Leu | Phe | Ile | Lys | Asp | Tyr | Arg | Tyr | Thr | Tyr | Arg |  |     |
| 545 |     |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     | 560 |  |     |
| Cys | His | Arg | Gly | Asp | Thr | Gln | Ile | Gln | Thr | Arg | Arg | Ser | Phe | Glu | Leu |  |     |
|     |     |     |     | 565 |     |     |     |     | 570 |     |     |     |     | 575 |     |  |     |
| Lys | Lys | Leu | Trp | Glu | Gln | Thr | Arg | Ser | Lys | Ala | Gly | Leu | Leu | Val | Ser |  |     |
|     |     |     | 580 |     |     |     |     | 585 |     |     |     |     | 590 |     |     |  |     |
| Asp | Gly | Gly | Pro | Asn | Leu | Tyr | Asn | Ile | Arg | Asn | Leu | His | Ile | Pro | Glu |  |     |
|     |     | 595 |     |     |     |     | 600 |     |     |     |     | 605 |     |     |     |  |     |
| Val | Cys | Leu | Lys | Trp | Glu | Leu | Met | Asp | Glu | Asp | Tyr | Gln | Gly | Arg | Leu |  |     |
|     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |  |     |
| Cys | Asn | Pro | Leu | Asn | Pro | Phe | Val | Asn | His | Lys | Asp | Ile | Glu | Ser | Val |  |     |
| 625 |     |     |     | 630 |     |     |     |     |     | 635 |     |     |     |     | 640 |  |     |
| Asn | Asn | Ala | Val | Ile | Met | Pro | Ala | His | Gly | Pro | Ala | Lys | Asn | Met | Glu |  |     |
|     |     |     |     | 645 |     |     |     |     | 650 |     |     |     |     | 655 |     |  |     |
| Tyr | Asp | Ala | Val | Ala | Thr | Thr | His | Ser | Trp | Ile | Pro | Lys | Arg | Asn | Arg |  |     |
|     |     |     | 660 |     |     |     |     | 665 |     |     |     |     | 670 |     |     |  |     |
| Ser | Ile | Leu | Asn | Thr | Ser | Gln | Arg | Gly | Ile | Leu | Glu | Asp | Glu | Gln | Met |  |     |
|     |     | 675 |     |     |     |     | 680 |     |     |     |     | 685 |     |     |     |  |     |
| Tyr | Gln | Lys | Cys | Cys | Asn | Leu | Phe | Glu | Lys | Phe | Phe | Pro | Ser | Ser | Ser |  |     |
|     | 690 |     |     |     |     | 695 |     |     |     |     | 700 |     |     |     |     |  |     |
| Tyr | Arg | Arg | Pro | Val | Gly | Ile | Ser | Ser | Met | Val | Glu | Ala | Met | Val | Ser |  |     |
| 705 |     |     |     |     | 710 |     |     |     |     | 715 |     |     |     |     | 720 |  |     |
| Arg | Ala | Arg | Ile | Asp | Ala | Arg | Ile | Asp | Phe | Glu | Ser | Gly | Arg | Ile | Lys |  |     |

|   |   |            |            |             |             |     |
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| acaaagtgtc  | gcccgaggta  | ctggtcgacc | tccgaagttg | gggggggagcg | aaagcaggca  | 180 |
| aaccatttga  | atg gat gtc aat ccg act tta ctt ttc tta aaa gtg cca | 229        |            |             |             |     |
|   | Met Asp Val Asn Pro Thr Leu Leu Phe Leu Lys Val Pro |            |            |             |             |     |
|   | 1 5 10  |            |            |             |             |     |
| gca caa aat gct ata agc aca act ttc cct tat act gga gac cct cct | 277   |            |            |             |             |     |
| Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro |   |            |            |             |             |     |
|   | 15 20 25  |            |            |             |             |     |
| tac agc cat ggg aca gga aca gga tac acc atg gat act gtc aac agg | 325   |            |            |             |             |     |
| Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg |   |            |            |             |             |     |
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| aca cat cag tac tca gaa agg gga aga tgg aca aca aac acc gaa act | 373   |            |            |             |             |     |
| Thr His Gln Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr |   |            |            |             |             |     |
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| gga gca ccg caa ctg aac ccg att gat ggg cca ctg cca gaa gac aat | 421   |            |            |             |             |     |
| Gly Ala Pro Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn |   |            |            |             |             |     |
|   | 65 70 75  |            |            |             |             |     |
| gaa cca agt ggt tat gcc caa aca gat tgt gta ttg gaa gca atg gcc | 469   |            |            |             |             |     |
| Glu Pro Ser Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala |   |            |            |             |             |     |
|   | 80 85 90  |            |            |             |             |     |
| ttc ctt gag gaa tcc cat cct ggt atc ttt gag acc tcg tgt ctt gaa | 517   |            |            |             |             |     |
| Phe Leu Glu Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu |   |            |            |             |             |     |
|   | 95 100 105  |            |            |             |             |     |
| acg atg gag gtt gtt cag caa aca cga gtg gac aag ctg aca caa ggc | 565   |            |            |             |             |     |
| Thr Met Glu Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly |   |            |            |             |             |     |
|   | 110 115 120 125                                     |            |            |             |             |     |
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| Arg Gln Thr Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr |   |            |            |             |             |     |
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| gca ttg gcc aac aca ata gaa gtg ttc aga tca aat ggc ctg acg gcc | 661   |            |            |             |             |     |
| Ala Leu Ala Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala |   |            |            |             |             |     |
|   | 145 150 155   |            |            |             |             |     |
| aat gaa tct gga agg ctg ata gac ttc ctt aag gat gta atg gag tca | 709   |            |            |             |             |     |
| Asn Glu Ser Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser |   |            |            |             |             |     |
|   | 160 165 170   |            |            |             |             |     |
| atg aac aaa gaa gaa atg gag atc aca act cat ttt cag aga aag aga | 757   |            |            |             |             |     |
| Met Asn Lys Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg |   |            |            |             |             |     |
|   | 175 180 185   |            |            |             |             |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
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| Arg | Val | Arg | Asp | Asn | Met | Thr | Lys | Lys | Met | Val | Thr | Gln | Arg | Thr | Ile |      |
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| Gly | Lys | Arg | Lys | Gln | Arg | Leu | Asn | Lys | Arg | Ser | Tyr | Leu | Ile | Arg | Ala |      |
|     |     |     |     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |      |
| tta | acc | ctg | aac | aca | atg | acc | aaa | gat | gct | gag | aga | ggg | aag | cta | aaa | 901  |
| Leu | Thr | Leu | Asn | Thr | Met | Thr | Lys | Asp | Ala | Glu | Arg | Gly | Lys | Leu | Lys |      |
|     |     |     | 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |      |
| cgg | aga | gca | att | gca | aca | cca | ggg | atg | cag | atc | aga | ggg | ttt | gtg | tac | 949  |
| Arg | Arg | Ala | Ile | Ala | Thr | Pro | Gly | Met | Gln | Ile | Arg | Gly | Phe | Val | Tyr |      |
|     |     | 240 |     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |      |
| ttt | gtt | gag | aca | ctg | gcg | aga | agc | att | tgc | gag | aag | ctt | gaa | cag | tct | 997  |
| Phe | Val | Glu | Thr | Leu | Ala | Arg | Ser | Ile | Cys | Glu | Lys | Leu | Glu | Gln | Ser |      |
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| ggg | cta | cca | gtt | gga | ggg | aat | gag | aag | aaa | gct | aaa | ttg | gca | aat | gtc | 1045 |
| Gly | Leu | Pro | Val | Gly | Gly | Asn | Glu | Lys | Lys | Ala | Lys | Leu | Ala | Asn | Val |      |
| 270 |     |     |     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |      |
| gtg | agg | aag | atg | atg | acg | aac | tca | caa | gac | act | gag | ctc | tct | ttc | aca | 1093 |
| Val | Arg | Lys | Met | Met | Thr | Asn | Ser | Gln | Asp | Thr | Glu | Leu | Ser | Phe | Thr |      |
|     |     |     |     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |      |
| atc | acc | gga | gac | aat | acc | aaa | tgg | aat | gag | aac | caa | aac | ccc | cga | atg | 1141 |
| Ile | Thr | Gly | Asp | Asn | Thr | Lys | Trp | Asn | Glu | Asn | Gln | Asn | Pro | Arg | Met |      |
|     |     |     | 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |      |
| ttc | ctg | gca | atg | ata | aca | tac | atc | aca | aga | aac | caa | cct | gag | tgg | ttt | 1189 |
| Phe | Leu | Ala | Met | Ile | Thr | Tyr | Ile | Thr | Arg | Asn | Gln | Pro | Glu | Trp | Phe |      |
|     |     | 320 |     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |      |
| aga | aat | gtc | ttg | agc | atc | gcg | ccg | ata | atg | ttt | tcg | aac | aaa | atg | gcg | 1237 |
| Arg | Asn | Val | Leu | Ser | Ile | Ala | Pro | Ile | Met | Phe | Ser | Asn | Lys | Met | Ala |      |
|     | 335 |     |     |     |     | 340 |     |     |     |     | 345 |     |     |     |     |      |
| agg | cta | ggg | aaa | ggg | tac | atg | ttc | gaa | agc | aaa | agc | atg | aag | ctc | cga | 1285 |
| Arg | Leu | Gly | Lys | Gly | Tyr | Met | Phe | Glu | Ser | Lys | Ser | Met | Lys | Leu | Arg |      |
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| aca | caa | ata | cca | gca | gaa | atg | cta | gca | agc | atc | gat | ttg | aaa | tac | ttc | 1333 |
| Thr | Gln | Ile | Pro | Ala | Glu | Met | Leu | Ala | Ser | Ile | Asp | Leu | Lys | Tyr | Phe |      |
|     |     |     |     | 370 |     |     |     | 375 |     |     |     |     |     | 380 |     |      |
| aat | gat | tca | act | aga | aag | aag | att | gaa | aaa | atc | cgg | ccg | ctc | tta | ata | 1381 |
| Asn | Asp | Ser | Thr | Arg | Lys | Lys | Ile | Glu | Lys | Ile | Arg | Pro | Leu | Leu | Ile |      |
|     |     |     | 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |      |
| gat | ggg | act |     |     |     |     |     |     |     |     |     |     |     |     |     |      |

|   |      |
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| agc aag aaa aag tct tac ata aac aga aca ggt aca ttt gaa ttc aca<br>Ser Lys Lys Lys Ser Tyr Ile Asn Arg Thr Gly Thr Phe Glu Phe Thr<br>480 485 490     | 1669 |
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| ccc agc ttt ggg gtg tct ggg atc aac gag tct gcg gac atg agt att<br>Pro Ser Phe Gly Val Ser Gly Ile Asn Glu Ser Ala Asp Met Ser Ile<br>510 515 520 525 | 1765 |
| gga gtt act gtc atc aaa aac aat atg ata aac aat gat ctt ggt cca<br>Gly Val Thr Val Ile Lys Asn Asn Met Ile Asn Asn Asp Leu Gly Pro<br>530 535 540     | 1813 |
| gca acc gct caa atg gcc ctt cag ctg ttc atc aaa gat tac agg tac<br>Ala Thr Ala Gln Met Ala Leu Gln Leu Phe Ile Lys Asp Tyr Arg Tyr<br>545 550 555     | 1861 |
| acg tac cgg tgc cat aga ggt gac aca caa ata caa acc cga aga tca<br>Thr Tyr Arg Cys His Arg Gly Asp Thr Gln Ile Gln Thr Arg Arg Ser<br>560 565 570     | 1909 |
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| ctg gtc tcc gac gga ggc cca aat tta tac aac att aga aat ctc cac<br>Leu Val Ser Asp Gly Gly Pro Asn Leu Tyr Asn Ile Arg Asn Leu His<br>590 595 600 605 | 2005 |
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| agc agt tca tac aga aga cca gtc ggg ata tcc agt atg gtg gag gct<br>Ser Ser Ser Tyr Arg Arg Pro Val Gly Ile Ser Ser Met Val Glu Ala<br>705 710 715     | 2341 |

2002-02-27 10:23:37

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Arg Ile Lys Lys Glu Glu Phe Thr Glu Ile Met Lys Ile Cys Ser Thr  
735 740 745

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750 755

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20220714 14:00

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Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg Thr His Gln
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Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr Gly Ala Pro
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Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn Glu Pro Ser
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Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly Arg Gln Thr
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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
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| Asn | Thr | Ile | Glu | Val | Phe | Arg | Ser | Asn | Gly | Leu | Thr | Ala | Asn | Glu | Ser |
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| Ile | Ala | Thr | Pro | Gly | Met | Gln | Ile | Arg | Gly | Phe | Val | Tyr | Phe | Val | Glu |
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|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |
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|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |
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 gcaaaaaagg gaataagggc gacacggaaa tgttgaatac tcatactctt cctttttcaa 4651  
 tattattgaa gcatttatca gggttattgt ctcagtagcg gatacatatt tgaatgtatt 4711  
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 ctgcttaatt tgatgcctgg cagtttatgg cgggcgctct gcccgccacc ctccggggcg 4831  
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 Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg Thr His Gln  
 35 40 45  
 Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr Gly Ala Pro  
 50 55 60  
 Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn Glu Pro Ser  
 65 70 75 80  
 Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala Phe Leu Glu  
 85 90 95  
 Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu Thr Met Glu  
 100 105 110  
 Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly Arg Gln Thr  
 115 120 125  
 Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr Ala Leu Ala  
 130 135 140  
 Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala Asn Glu Ser  
 145 150 155 160  
 Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser Met Asn Lys  
 165 170 175  
 Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg Arg Val Arg  
 180 185 190

10073377-020802

Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile Gly Lys Arg  
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 Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala Leu Thr Leu  
 210 215 220  
 Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys Arg Arg Ala  
 225 230 235 240  
 Ile Ala Thr Pro Gly Met Gln Ile Arg Gly Phe Val Tyr Phe Val Glu  
 245 250 255  
 Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser Gly Leu Pro  
 260 265 270  
 Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val Val Arg Lys  
 275 280 285  
 Met Met Thr Asn Ser Gln Asp Thr Glu Ile Ser Phe Thr Ile Thr Gly  
 290 295 300  
 Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met Phe Leu Ala  
 305 310 315 320  
 Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe Arg Asn Val  
 325 330 335  
 Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala Arg Leu Gly  
 340 345 350  
 Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Ile Arg Thr Gln Ile  
 355 360 365  
 Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe Asn Glu Pro  
 370 375 380  
 Thr Arg Lys Lys Ile Glu Lys Ile Arg Pro Leu Ile Ile Asp Gly Thr  
 385 390 395 400  
 Ala Ser Leu Ser Pro Gly Met Met Met Gly Met Phe Asn Met Leu Ser  
 405 410 415  
 Thr Val Leu Gly Val Ser Ile Leu Asn Leu Gly Gln Lys Arg Tyr Thr  
 420 425 430  
 Lys Thr Thr Tyr Trp Trp Asp Gly Leu Gln Ser Ser Asp Asp Phe Ala  
 435 440 445  
 Leu Ile Val Asn Ala Pro Asn His Glu Gly Ile Gln Ala Gly Val Asp  
 450 455 460  
 Arg Phe Tyr Arg Thr Cys Lys Leu Val Gly Ile Asn Met Ser Lys Lys  
 465 470 475 480  
 Lys Ser Tyr Ile Asn Arg Thr Gly Thr Phe Glu Phe Thr Ser Phe Phe  
 485 490 495  
 Tyr Arg Tyr Gly Phe Val Ala Asn Phe Ser Met Glu Leu Pro Ser Phe  
 500 505 510  
 Gly Val Ser Gly Ile Asn Glu Ser Ala Asp Met Ser Ile Gly Val Thr  
 515 520 525  
 Val Ile Lys Asn Asn Met Ile Asn Asn Asp Leu Gly Pro Ala Thr Ala  
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1007337-020000  
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Gln Met Ala Leu Gln Leu Phe Ile Lys Asp Tyr Arg Tyr Thr Tyr Arg  
 545 550 555 560  
 Cys His Arg Gly Asp Thr Gln Ile Gln Thr Arg Arg Ser Phe Glu Ile  
 565 570 575  
 Lys Lys Leu Trp Glu Gln Thr His Ser Lys Ala Gly Leu Leu Val Ser  
 580 585 590  
 Asp Gly Gly Pro Asn Leu Tyr Asn Ile Arg Asn Leu His Ile Pro Glu  
 595 600 605  
 Val Cys Leu Lys Trp Glu Leu Met Asp Glu Asp Tyr Gln Gly Arg Leu  
 610 615 620  
 Cys Asn Pro Leu Asn Pro Phe Val Asn His Lys Asp Ile Glu Ser Val  
 625 630 635 640  
 Asn Asn Ala Val Ile Met Pro Ala His Gly Pro Ala Lys Asn Met Glu  
 645 650 655  
 Tyr Asp Ala Val Ala Thr Thr His Ser Trp Ile Pro Lys Arg Asn Arg  
 660 665 670  
 Ser Ile Leu Asn Thr Ser Gln Arg Gly Ile Leu Glu Asp Glu Gln Met  
 675 680 685  
 Tyr Gln Lys Cys Cys Asn Leu Phe Glu Lys Phe Phe Pro Ser Ser Ser  
 690 695 700  
 Tyr Arg Arg Pro Val Gly Ile Ser Ser Met Val Glu Ala Met Val Ser  
 705 710 715 720  
 Arg Ala Arg Ile Asp Ala Arg Ile Asp Phe Glu Ser Gly Arg Ile Lys  
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 acaaagtgtc gcccggagta ctggtcgacc tccgaagttg ggggggagcg aaagcaggca 180  
 aaccatttga atg gat gtc aat ccg act tta ctt ttc tta aaa gtg cca 229  
 Met Asp Val Asn Pro Thr Leu Leu Phe Leu Lys Val Pro  
 1 5 10

gca caa aat gct ata agc aca act ttc cct tat act gga gac cct cct 277  
 Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro  
 15 20 25

tac agc cat ggg aca gga aca gga tac acc atg gat act gtc aac agg 325  
 Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg  
 30 35 40 45

aca cat cag tac tca gaa agg gga aga tgg aca aca aac acc gaa act 373  
 Thr His Gln Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr  
 50 55 60

gga gca ccg caa ctc aac ccg att gat ggg cca ctg cca gaa gac aat 421  
 Gly Ala Pro Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn  
 65 70 75

gaa cca agt ggt tat gcc caa aca gat tgt gta ttg gaa gca atg gcc 469  
 Glu Pro Ser Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala  
 80 85 90

ttc ctt gag gaa tcc cat cct ggt atc ttt gag acc tcg tgt ctt gaa 517  
 Phe Leu Glu Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu  
 95 100 105

acc atg gag gtt gtt cag caa aca cga gtg gac aag ctg aca caa ggc 565  
 Thr Met Glu Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly  
 110 115 120 125

cga cag acc tat gac tgg act cta aat agg aac cag cct gct gca aca 613  
 Arg Gln Thr Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr  
 130 135 140

gca ttg gcc aac aca ata gaa gtg ttc aga tca aat ggc ctc acg gcc 661  
 Ala Leu Ala Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala  
 145 150 155

aat gaa tct gga agg ctc ata gac ttc ctt aag gat gta atg gag tca 709  
 Asn Glu Ser Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser  
 160 165 170

atg aac aaa gaa gaa atg gag atc aca act cat ttt cag aga aag aga 757  
 Met Asn Lys Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg  
 175 180 185

cga gtg aga gac aat atg act aag aaa atg gtg aca cag aga aca ata 805  
 Arg Val Arg Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile  
 190 195 200 205

ggt aaa agg aag cag aga ttg aac aaa agg agt tat cta att agg gca 853  
 Gly Lys Arg Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala  
 210 215 220

tta acc ctg aac aca atg acc aaa gat gct gag aga ggg aag cta aaa 901  
 Leu Thr Leu Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys  
 225 230 235

cgg aga gca att gca acc cca ggg atg caa ata agg ggg ttt gta tac 949  
 Arg Arg Ala Ile Ala Thr Pro Gly Met Gln Ile Arg Gly Phe Val Tyr  
 240 245 250

ttt gtt gag aca cta gca agg agt ata tgt gag aaa ctt gaa caa tca 997  
 Phe Val Glu Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser  
 255 260 265

gga ttg cca gtt gga ggc aat gag aag aaa gca aag ttg gca aat gtt 1045  
 Gly Leu Pro Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val  
 270 275 280 285

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 Val Arg Lys Met Met Thr Asn Ser Gln Asp Thr Glu Ile Ser Phe Thr  
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atc act gga gat aac acc aaa tgg aac gaa aat cag aac cct cgg atg 1141  
 Ile Thr Gly Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met  
 305 310 315

ttt ttg gcc atg atc aca tat ata acc aga aat cag ccc gaa tgg ttc 1189  
 Phe Leu Ala Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe  
 320 325 330

aga aat gtt cta agt att gct cca ata atg ttc tca aac aaa atg gcg 1237  
 Arg Asn Val Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala  
 335 340 345

aga ctg gga aag ggg tac atg ttt gag agc aag agt atg aaa att aga 1285  
 Arg Leu Gly Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Ile Arg  
 350 355 360 365

act caa ata cct gca gaa atg cta gca agt att gat cta aaa tat ttc 1333  
 Thr Gln Ile Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe  
 370 375 380

aat gaa cca aca agg aag aaa atc gag aaa ata agg cct ctc tta ata 1381  
 Asn Glu Pro Thr Arg Lys Lys Ile Glu Lys Ile Arg Pro Leu Leu Ile  
 385 390 395

gat ggg act gca tca ttg agc cct gga atg atg atg ggc atg ttc aat 1429  
 Asp Gly Thr Ala Ser Leu Ser Pro Gly Met Met Met Gly Met Phe Asn  
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atg tta agt act gta tta ggc gtc tcc atc ctg aat ctt gga caa aag 1477  
 Met Leu Ser Thr Val Leu Gly Val Ser Ile Leu Asn Leu Gly Gln Lys  
 415 420 425

aga cac acc aag act act tac tgg tgg gat ggt ctt caa tct tct gat 1525  
 Arg His Thr Lys Thr Thr Tyr Trp Trp Asp Gly Leu Gln Ser Ser Asp  
 430 435 440 445

gat ttt gct ctg att gtg aat gca ccc aat cat gaa ggg att caa gcc 1573  
 Asp Phe Ala Leu Ile Val Asn Ala Pro Asn His Glu Gly Ile Gln Ala  
 450 455 460

gga gtc aac agg ttt tat cga acc tgt aag cta ctt gga att aat atg 1621  
 Gly Val Asn Arg Phe Tyr Arg Thr Cys Lys Leu Leu Gly Ile Asn Met  
 465 470 475

agc aag aaa aag tct tac ata aac aga aca ggt aca ttt gaa ttc aca 1669  
 Ser Lys Lys Lys Ser Tyr Ile Asn Arg Thr Gly Thr Phe Glu Phe Thr  
 480 485 490

agc ttt ttc tat cgt tat ggg ttt gtt gcc aat ttc agc atg gag ctt 1717  
 Ser Phe Phe Tyr Arg Tyr Gly Phe Val Ala Asn Phe Ser Met Glu Leu  
 495 500 505

ccc agc ttt ggg gtg tct ggg atc aac gag tct gcg gac atg agt att 1765  
 Pro Ser Phe Gly Val Ser Gly Ile Asn Glu Ser Ala Asp Met Ser Ile  
 510 515 520 525

gga gtt act gtc atc aaa aac aat atg ata aac aat gat ctt ggt cca 1813  
 Gly Val Thr Val Ile Lys Asn Asn Met Ile Asn Asn Asp Leu Gly Pro  
 530 535 540

gca acc gct caa atg gcc ctt cag ctg ttc atc aaa gat tac agg tac 1861

1007337.000000

| Ala        | Thr        | Ala        | Gln        | Met        | Ala        | Leu | Gln | Leu        | Phe        | Ile        | Lys | Asp | Tyr | Arg | Tyr |      |
|------------|------------|------------|------------|------------|------------|-----|-----|------------|------------|------------|-----|-----|-----|-----|-----|------|
|            |            |            | 545        |            |            |     | 550 |            |            |            | 555 |     |     |     |     |      |
| acg        | tac        | cgg        | tgc        | cat        | aga        | ggt | gac | aca        | caa        | ata        | caa | acc | cga | aga | tca | 1909 |
| Thr        | Tyr        | Arg        | Cys        | His        | Arg        | Gly | Asp | Thr        | Gln        | Ile        | Gln | Thr | Arg | Arg | Ser |      |
|            |            |            | 560        |            |            |     | 565 |            |            |            | 570 |     |     |     |     |      |
| ttt        | gaa        | ata        | aag        | aaa        | ctg        | tgg | gag | caa        | acc        | cat        | tcc | aaa | gct | gga | ctg | 1957 |
| Phe        | Glu        | Ile        | Lys        | Lys        | Leu        | Trp | Glu | Gln        | Thr        | His        | Ser | Lys | Ala | Gly | Leu |      |
|            |            |            | 575        |            |            |     | 580 |            |            |            | 585 |     |     |     |     |      |
| ctg        | gtc        | tcc        | gac        | gga        | ggc        | cca | aat | tta        | tac        | aac        | att | aga | aat | ctc | cac | 2005 |
| Leu        | Val        | Ser        | Asp        | Gly        | Gly        | Pro | Asn | Leu        | Tyr        | Asn        | Ile | Arg | Asn | Leu | His |      |
|            |            |            | 590        |            |            |     | 595 |            |            |            | 600 |     |     |     | 605 |      |
| att        | cct        | gaa        | gtc        | tgc        | ttg        | aaa | tgg | gaa        | tta        | atg        | gat | gag | gat | tac | cag | 2053 |
| Ile        | Pro        | Glu        | Val        | Cys        | Leu        | Lys | Trp | Glu        | Leu        | Met        | Asp | Glu | Asp | Tyr | Gln |      |
|            |            |            | 610        |            |            |     | 615 |            |            |            | 620 |     |     |     |     |      |
| ggg        | cgt        | tta        | tgc        | aac        | cca        | ctg | aac | cca        | ttt        | gtc        | aac | cat | aaa | gac | att | 2101 |
| Gly        | Arg        | Leu        | Cys        | Asn        | Pro        | Leu | Asn | Pro        | Phe        | Val        | Asn | His | Lys | Asp | Ile |      |
|            |            |            | 625        |            |            |     | 630 |            |            |            | 635 |     |     |     |     |      |
| gaa        | tca        | gtg        | aac        | aat        | gca        | gtg | ata | atg        | cca        | gca        | cat | ggg | cca | gcc | aaa | 2149 |
| Glu        | Ser        | Val        | Asn        | Asn        | Ala        | Val | Ile | Met        | Pro        | Ala        | His | Gly | Pro | Ala | Lys |      |
|            |            |            | 640        |            |            |     | 645 |            |            |            | 650 |     |     |     |     |      |
| aac        | atg        | gag        | tat        | gat        | gct        | gtt | gca | aca        | aca        | cac        | tcc | tgg | atc | ccc | aaa | 2197 |
| Asn        | Met        | Glu        | Tyr        | Asp        | Ala        | Val | Ala | Thr        | Thr        | His        | Ser | Trp | Ile | Pro | Lys |      |
|            |            |            | 655        |            |            |     | 660 |            |            |            | 665 |     |     |     |     |      |
| aga        | aat        | cga        | tcc        | atc        | ttg        | aat | aca | agc        | caa        | aga        | gga | ata | ctt | gaa | gat | 2245 |
| Arg        | Asn        | Arg        | Ser        | Ile        | Leu        | Asn | Thr | Ser        | Gln        | Arg        | Gly | Ile | Leu | Glu | Asp |      |
|            |            |            | 670        |            |            |     | 675 |            |            |            | 680 |     |     |     | 685 |      |
| gaa        | caa        | atg        | tac        | caa        | aag        | tgc | tgc | aac        | tta        | ttt        | gaa | aaa | ttc | ttc | ccc | 2293 |
| Glu        | Gln        | Met        | Tyr        | Gln        | Lys        | Cys | Cys | Asn        | Leu        | Phe        | Glu | Lys | Phe | Phe | Pro |      |
|            |            |            | 690        |            |            |     | 695 |            |            |            | 700 |     |     |     |     |      |
| agc        | agt        | tca        | tac        | aga        | aga        | cca | gtc | ggg        | ata        | tcc        | agt | atg | gtg | gag | gct | 2341 |
| Ser        | Ser        | Ser        | Tyr        | Arg        | Arg        | Pro | Val | Gly        | Ile        | Ser        | Ser | Met | Val | Glu | Ala |      |
|            |            |            | 705        |            |            |     | 710 |            |            |            | 715 |     |     |     |     |      |
| atg        | gtt        | tcc        | aga        | gcc        | cga        | att | gat | gca        | cga        | att        | gat | ttc | gaa | tct | gga | 2389 |
| Met        | Val        | Ser        | Arg        | Ala        | Arg        | Ile | Asp | Ala        | Arg        | Ile        | Asp | Phe | Glu | Ser | Gly |      |
|            |            |            | 720        |            |            |     | 725 |            |            |            | 730 |     |     |     |     |      |
| agg        | ata        | aag        | aaa        | gag        | gag        | ttc | act | gag        | atc        | atg        | aag | atc | tgt | tcc | acc | 2437 |
| Arg        | Ile        | Lys        | Lys        | Glu        | Glu        | Phe | Thr | Glu        | Ile        | Met        | Lys | Ile | Cys | Ser | Thr |      |
|            |            |            | 735        |            |            |     | 740 |            |            |            | 745 |     |     |     |     |      |
| att        | gaa        | gag        | ctc        | aga        | cgg        | caa | aaa | tagtgaattt | agcttgtcct | tcatgaaaaa |     |     |     |     |     | 2491 |
| Ile        | Glu        | Glu        | Leu        | Arg        | Gln        | Lys |     |            |            |            |     |     |     |     |     |      |
|            |            |            | 750        |            |            |     | 755 |            |            |            |     |     |     |     |     |      |
| atgccttggt | tctactaata | acccggcggc | ccaaaatgcc | gactcggagc | gaaagatata |     |     |            |            |            |     |     |     |     |     | 2551 |
| cctcccccg  | ggccgggagg | tcgcgtcacc | gaccacgccg | cgggccag   |            |     |     |            |            |            |     |     |     |     |     |      |

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| atcgtgacct  | gcattaatga | atcaggggat | aacgcaggaa  | agaacatgtg  | agcaaaaaggc | 2971 |
| cagcaaaaagg | ccaggaaccg | taaaaaggcc | gcgttgctgg  | cgtttttcca  | taggctccgc  | 3031 |
| ccccctgacg  | agcatcacia | aaatcgacgc | tcaagtcaga  | ggtggcgaaa  | cccgacagga  | 3091 |
| ctataaagat  | accaggcggt | tccccctgga | agctccctcg  | tgcgctctcc  | tgttccgacc  | 3151 |
| ctgccgctta  | ccggatacct | gtccgccttt | ctcccttcgg  | gaagcgtggc  | gctttctcat  | 3211 |
| agctcacgct  | gtaggtatct | cagttcggtg | taggtcggtc  | gctccaagct  | gggctgtgtg  | 3271 |
| cacgaacccc  | ccgttcagcc | cgaccgctgc | gccttatccg  | gtaactatcg  | tcttgagtcc  | 3331 |
| aaccgcgtaa  | gacacgactt | atcgccactg | gcagcagcca  | ctggtaacag  | gattagcaga  | 3391 |
| gcgaggtatg  | taggcggtgc | tacagagttc | ttgaagtgg   | ggcctaacta  | cggctacact  | 3451 |
| agaaggacag  | tatttggtat | ctgcgctctg | ctgaagccag  | ttaccttcgg  | aaaaagagtt  | 3511 |
| ggtagctctt  | gatccggcaa | acaaaccacc | gctggtagcg  | gtggtttttt  | tgtttgcaag  | 3571 |
| cagcagatta  | cgcgagaaa  | aaaaggatct | caagaagatc  | ctttgatctt  | ttctacgggg  | 3631 |
| tctgacgctc  | agtggaacga | aaactcacgt | taagggattt  | tggtcatgag  | attatcaaaa  | 3691 |
| aggatcttca  | cctagatcct | tttaaatata | aaatgaagtt  | ttaaatcaat  | ctaaagtata  | 3751 |
| tatgagtaaa  | cttggtctga | cagttaccaa | tgcttaatca  | gtgaggcacc  | tatctcagcg  | 3811 |
| atctgtctat  | ttcgttcatc | catagttgcc | tgactccccg  | tcgtgtagat  | aactacgata  | 3871 |
| cgggaggggt  | taccatctgg | ccccagtgct | gcaatgatac  | cgcgagaccc  | acgctcaccg  | 3931 |
| gtccagatt   | tatcagcaat | aaaccagcca | gccggaaggg  | ccgagcgcag  | aagtggtcct  | 3991 |
| gcaactttat  | ccgcctccat | ccagtctatt | aattgttgcc  | gggaagctag  | agtaagtagt  | 4051 |
| tcgccagtta  | atagtttgcg | caacgttggt | gccattgcta  | caggcatcgt  | ggtgtcacgc  | 4111 |
| tcgtcgtttg  | gtagggcttc | attcagctcc | ggttcccaac  | gatcaaggcg  | agttacatga  | 4171 |
| tcccccatgt  | tgtgcaaaaa | agcggttagc | tccttcgggtc | ctccgatcgt  | tgtcagaagt  | 4231 |
| aagttggccg  | cagtgttata | actcatgggt | atggcagcac  | tgcataattc  | tcttactgtc  | 4291 |
| atgccatccg  | taagatgctt | ttctgtgact | ggtgagtact  | caaccaagtc  | attctgagaa  | 4351 |
| tagtgtagtc  | ggcgaccgag | ttgctcttgc | ccggcgctcaa | cacgggataa  | taccgcgcca  | 4411 |
| catagcagaa  | ctttaaaagt | gtcatcatt  | ggaaaacggt  | cttcggggcg  | aaaactctca  | 4471 |
| aggatcttac  | cgctgttgag | atccagttcg | atgtaaccca  | ctcgtgcacc  | caactgatct  | 4531 |
| tcagcatctt  | ttactttcac | cagcgtttct | gggtgagcaa  | aaacaggaag  | gcaaaatgcc  | 4591 |
| gcaaaaaaagg | gaataagggc | gacacggaaa | tggtgaatac  | tcataactctt | cctttttcaa  | 4651 |
| tattattgaa  | gcatttatca | gggttattgt | ctcatgagcg  | gatacatatt  | tgaatgtatt  | 4711 |
| tagaaaaata  | aacaaaagag | tttgtagaaa | cgcaaaaagg  | ccatccgtca  | ggatggcctt  | 4771 |
| ctgcttaatt  | tgatgcctgg | cagtttatgg | cgggcgtcct  | gcccgccacc  | ctccgggccc  | 4831 |
| ttgcttcgca  | acgttcaa   | ccgctcccg  | cggatttgct  | ctactcagga  | gagcgttcac  | 4891 |

cgacaaacaa cagataaaac gaaaggccca gtctttcgac tgagcctttc gttttatttg 4951  
 atgcctggca gttccctact ctgcgatggg gagacccac actaccatcg gcgctacggc 5011  
 gtttcacttc tgagttcggc atgggggtcag gtgggaccac cgcgctactg ccgccaggca 5071  
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 Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg Thr His Gln  
 35 40 45  
 Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr Gly Ala Pro  
 50 55 60  
 Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn Glu Pro Ser  
 65 70 75 80  
 Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala Phe Leu Glu  
 85 90 95  
 Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu Thr Met Glu  
 100 105 110  
 Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly Arg Gln Thr  
 115 120 125  
 Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr Ala Leu Ala  
 130 135 140  
 Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala Asn Glu Ser  
 145 150 155 160  
 Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser Met Asn Lys  
 165 170 175  
 Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg Arg Val Arg  
 180 185 190  
 Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile Gly Lys Arg  
 195 200 205  
 Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala Leu Thr Leu  
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 Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys Arg Arg Ala  
 225 230 235 240  
 Ile Ala Thr Pro Gly Met Gln Ile Arg Gly Phe Val Tyr Phe Val Glu  
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Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser Gly Leu Pro  
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 Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val Val Arg Lys  
 275 280 285  
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 Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met Phe Leu Ala  
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 Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe Arg Asn Val  
 325 330 335  
 Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala Arg Leu Gly  
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 Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Ile Arg Thr Gln Ile  
 355 360 365  
 Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe Asn Glu Pro  
 370 375 380  
 Thr Arg Lys Lys Ile Glu Lys Ile Arg Pro Leu Leu Ile Asp Gly Thr  
 385 390 395 400  
 Ala Ser Leu Ser Pro Gly Met Met Met Gly Met Phe Asn Met Leu Ser  
 405 410 415  
 Thr Val Leu Gly Val Ser Ile Leu Asn Leu Gly Gln Lys Arg His Thr  
 420 425 430  
 Lys Thr Thr Tyr Trp Trp Asp Gly Leu Gln Ser Ser Asp Asp Phe Ala  
 435 440 445  
 Leu Ile Val Asn Ala Pro Asn His Glu Gly Ile Gln Ala Gly Val Asn  
 450 455 460  
 Arg Phe Tyr Arg Thr Cys Lys Leu Leu Gly Ile Asn Met Ser Lys Lys  
 465 470 475 480  
 Lys Ser Tyr Ile Asn Arg Thr Gly Thr Phe Glu Phe Thr Ser Phe Phe  
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 Tyr Arg Tyr Gly Phe Val Ala Asn Phe Ser Met Glu Leu Pro Ser Phe  
 500 505 510  
 Gly Val Ser Gly Ile Asn Glu Ser Ala Asp Met Ser Ile Gly Val Thr  
 515 520 525  
 Val Ile Lys Asn Asn Met Ile Asn Asn Asp Leu Gly Pro Ala Thr Ala  
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 Gln Met Ala Leu Gln Leu Phe Ile Lys Asp Tyr Arg Tyr Thr Tyr Arg  
 545 550 555 560  
 Cys His Arg Gly Asp Thr Gln Ile Gln Thr Arg Arg Ser Phe Glu Ile  
 565 570 575  
 Lys Lys Leu Trp Glu Gln Thr His Ser Lys Ala Gly Leu Leu Val Ser  
 580 585 590  
 Asp Gly Gly Pro Asn Leu Tyr Asn Ile Arg Asn Leu His Ile Pro Glu  
 595 600 605

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Val Cys Leu Lys Trp Glu Leu Met Asp Glu Asp Tyr Gln Gly Arg Leu  
610 615 620

Cys Asn Pro Leu Asn Pro Phe Val Asn His Lys Asp Ile Glu Ser Val  
625 630 635 640

Asn Asn Ala Val Ile Met Pro Ala His Gly Pro Ala Lys Asn Met Glu  
645 650 655

Tyr Asp Ala Val Ala Thr Thr His Ser Trp Ile Pro Lys Arg Asn Arg  
660 665 670

Ser Ile Leu Asn Thr Ser Gln Arg Gly Ile Leu Glu Asp Glu Gln Met  
675 680 685

Tyr Gln Lys Cys Cys Asn Leu Phe Glu Lys Phe Phe Pro Ser Ser Ser  
690 695 700

Tyr Arg Arg Pro Val Gly Ile Ser Ser Met Val Glu Ala Met Val Ser  
705 710 715 720

Arg Ala Arg Ile Asp Ala Arg Ile Asp Phe Glu Ser Gly Arg Ile Lys  
725 730 735

Lys Glu Glu Phe Thr Glu Ile Met Lys Ile Cys Ser Thr Ile Glu Glu  
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Leu Arg Arg Gln Lys  
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<211> 5169

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: pHL3259

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<221> CDS

<222> (191)..(2461)

<400> 44

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acaaagtgtc gcccgagta ctggtcgacc tccgaagttg ggggggagcg aaagcaggca 180

aaccatttga atg gat gtc aat ccg act tta ctt ttc tta aaa gtg cca 229  
Met Asp Val Asn Pro Thr Leu Leu Phe Leu Lys Val Pro  
1 5 10

gca caa aat gct ata agc aca act ttc cct tat act gga gac cct cct 277  
Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro  
15 20 25

tac agc cat ggg aca gga aca gga tac acc atg gat act gtc aac agg 325  
Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg  
30 35 40 45

aca cat cag tac tca gaa agg gga aga tgg aca aca aac acc gaa act 373  
Thr His Gln Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr  
50 55 60

20073377-020802



gga gca ccg caa ctc aac ccg att gat ggg cca ctg cca gaa gac aat 421  
 Gly Ala Pro Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn  
                     65                    70                    75

gaa cca agt ggt tat gcc caa aca gat tgt gta ttg gaa gca atg gcc 469  
 Glu Pro Ser Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala  
                     80                    85                    90

ttc ctt gag gaa tcc cat cct ggt atc ttt gag acc tcg tgt ctt gaa 517  
 Phe Leu Glu Glu Ser His Pro Gly Ile Phe Glu Thr Ser Cys Leu Glu  
                     95                    100                    105

acg atg gag gtt gtt cag caa aca cga gtg gac aag ctg aca caa ggc 565  
 Thr Met Glu Val Val Gln Gln Thr Arg Val Asp Lys Leu Thr Gln Gly  
 110                    115                    120                    125

cga cag acc tat gac tgg act cta aat agg aac cag cct gct gca aca 613  
 Arg Gln Thr Tyr Asp Trp Thr Leu Asn Arg Asn Gln Pro Ala Ala Thr  
                     130                    135                    140

gca ttg gcc aac aca ata gaa gtg ttc aga tca aat ggc ctc acg gcc 661  
 Ala Leu Ala Asn Thr Ile Glu Val Phe Arg Ser Asn Gly Leu Thr Ala  
                     145                    150                    155

aat gaa tct gga agg ctc ata gac ttc ctt aag gat gta atg gag tca 709  
 Asn Glu Ser Gly Arg Leu Ile Asp Phe Leu Lys Asp Val Met Glu Ser  
                     160                    165                    170

atg aac aaa gaa gaa atg gag atc aca act cat ttt cag aga aag aga 757  
 Met Asn Lys Glu Glu Met Glu Ile Thr Thr His Phe Gln Arg Lys Arg  
                     175                    180                    185

cga gtg aga gac aat atg act aag aaa atg gtg aca cag aga aca ata 805  
 Arg Val Arg Asp Asn Met Thr Lys Lys Met Val Thr Gln Arg Thr Ile  
 190                    195                    200                    205

ggt aaa agg aag cag aga ttg aac aaa agg agt tat cta att agg gca 853  
 Gly Lys Arg Lys Gln Arg Leu Asn Lys Arg Ser Tyr Leu Ile Arg Ala  
                     210                    215                    220

tta acc ctg aac aca atg acc aaa gat gct gag aga ggg aag cta aaa 901  
 Leu Thr Leu Asn Thr Met Thr Lys Asp Ala Glu Arg Gly Lys Leu Lys  
                     225                    230                    235

cgg aga gca att gca acc cca ggg atg caa ata agg ggg ttt gta tac 949  
 Arg Arg Ala Ile Ala Thr Pro Gly Met Gln Ile Arg Gly Phe Val Tyr  
                     240                    245                    250

ttt gtt gag aca cta gca agg agt ata tgt gag aaa ctt gaa caa tca 997  
 Phe Val Glu Thr Leu Ala Arg Ser Ile Cys Glu Lys Leu Glu Gln Ser  
                     255                    260                    265

gga ttg cca gtt gga ggc aat gag aag aaa gca aag ttg gca aat gtt 1045  
 Gly Leu Pro Val Gly Gly Asn Glu Lys Lys Ala Lys Leu Ala Asn Val  
 270                    275                    280                    285

gta agg aag atg atg acc aat tct cag gac act gaa att tct ttc acc 1093  
 Val Arg Lys Met Met Thr Asn Ser Gln Asp Thr Glu Ile Ser Phe Thr  
                     290                    295                    300

atc act gga gat aac acc aaa tgg aac gaa aat cag aac cct cgg atg 1141  
 Ile Thr Gly Asp Asn Thr Lys Trp Asn Glu Asn Gln Asn Pro Arg Met  
                     305                    310                    315

ttt ttg gcc atg atc aca tat ata acc aga aat cag ccc gaa tgg ttc 1189  
 Phe Leu Ala Met Ile Thr Tyr Ile Thr Arg Asn Gln Pro Glu Trp Phe  
                     320                    325                    330

10073377-020000

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 Arg Asn Val Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala  
 335 340 345

aga ctg gga aag ggg tac atg ttt gag agc aag agt atg aaa att aga 1285  
 Arg Leu Gly Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Ile Arg  
 350 355 360 365

act caa ata cct gca gaa atg cta gca agt att gat cta aaa tat ttc 1333  
 Thr Gln Ile Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe  
 370 375 380

aat gaa cca aca agg aag aaa atc gag aaa ata agg cct ctc tta ata 1381  
 Asn Glu Pro Thr Arg Lys Lys Ile Glu Lys Ile Arg Pro Leu Leu Ile  
 385 390 395

gat ggg act gca tca ttg agc cct gga atg atg atg ggc atg ttc aat 1429  
 Asp Gly Thr Ala Ser Leu Ser Pro Gly Met Met Met Gly Met Phe Asn  
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atg tta agt act gta tta ggc gtc tcc atc ctg aat ctt gga caa aag 1477  
 Met Leu Ser Thr Val Leu Gly Val Ser Ile Leu Asn Leu Gly Gln Lys  
 415 420 425

aga cac acc aag act act tac tgg tgg gat ggt ctt caa tct tct gat 1525  
 Arg His Thr Lys Thr Thr Tyr Trp Trp Asp Gly Leu Gln Ser Ser Asp  
 430 435 440 445

gat ttt gct ctg att gtg aat gca ccc aat cat gaa ggg att caa gcc 1573  
 Asp Phe Ala Leu Ile Val Asn Ala Pro Asn His Glu Gly Ile Gln Ala  
 450 455 460

gga gtc aac agg ttt tat cga acc tgt aag cta ctt gga att aat atg 1621  
 Gly Val Asn Arg Phe Tyr Arg Thr Cys Lys Leu Leu Gly Ile Asn Met  
 465 470 475

agc aag aaa aag tct tac ata aac aga aca ggt aca ttt gaa ttc aca 1669  
 Ser Lys Lys Lys Ser Tyr Ile Asn Arg Thr Gly Thr Phe Glu Phe Thr  
 480 485 490

agc ttt ttc tac cgc tat gga ttt gta gcc aat ttt agt atg gag ttg 1717  
 Ser Phe Phe Tyr Arg Tyr Gly Phe Val Ala Asn Phe Ser Met Glu Leu  
 495 500 505

ccc agc ttt gga gta tca gga att aat gaa tcg gct gat atg agc att 1765  
 Pro Ser Phe Gly Val Ser Gly Ile Asn Glu Ser Ala Asp Met Ser Ile  
 510 515 520 525

gga gta aca gtg ata aag aat aac atg ata aac aat gat ctt gga ccg 1813  
 Gly Val Thr Val Ile Lys Asn Asn Met Ile Asn Asn Asp Leu Gly Pro  
 530 535 540

gca aca gcc caa atg gct ctc caa tta ttc atc aag gac tac aga tat 1861  
 Ala Thr Ala Gln Met Ala Leu Gln Leu Phe Ile Lys Asp Tyr Arg Tyr  
 545 550 555

aca tac agg tgt cac agg gga gac aca caa atc caa acg agg agg tca 1909  
 Thr Tyr Arg Cys His Arg Gly Asp Thr Gln Ile Gln Thr Arg Arg Ser  
 560 565 570

ttc gag cta aag aag ctg tgg gag cag acc cgc tca aag gca gga ctg 1957  
 Phe Glu Leu Lys Lys Leu Trp Glu Gln Thr Arg Ser Lys Ala Gly Leu  
 575 580 585

1237 1285 1333 1381 1429 1477 1525 1573 1621 1669 1717 1765 1813 1861 1909 1957

|   |      |
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| ttg gtt tca gat ggc gga cca aac ctg tac aac att cga aat ctc cac<br>Leu Val Ser Asp Gly Gly Pro Asn Leu Tyr Asn Ile Arg Asn Leu His<br>590 595 600 605 | 2005 |
| att cct gaa gtc tgc ttg aaa tgg gaa tta atg gat gag gat tac cag<br>Ile Pro Glu Val Cys Leu Lys Trp Glu Leu Met Asp Glu Asp Tyr Gln<br>610 615 620     | 2053 |
| ggg cgt tta tgc aac cca ctg aac cca ttt gtc aac cat aaa gac att<br>Gly Arg Leu Cys Asn Pro Leu Asn Pro Phe Val Asn His Lys Asp Ile<br>625 630 635     | 2101 |
| gaa tca gtg aac aat gca gtg ata atg cca gca cat ggt cca gcc aaa<br>Glu Ser Val Asn Asn Ala Val Ile Met Pro Ala His Gly Pro Ala Lys<br>640 645 650     | 2149 |
| aac atg gag tat gat gct gtt gca aca aca cac tcc tgg atc ccc aaa<br>Asn Met Glu Tyr Asp Ala Val Ala Thr Thr His Ser Trp Ile Pro Lys<br>655 660 665     | 2197 |
| aga aat cga tcc atc ttg aat aca agc caa aga gga ata ctt gaa gat<br>Arg Asn Arg Ser Ile Leu Asn Thr Ser Gln Arg Gly Ile Leu Glu Asp<br>670 675 680 685 | 2245 |
| gaa caa atg tac caa aag tgc tgc aac tta ttt gaa aaa ttc ttc ccc<br>Glu Gln Met Tyr Gln Lys Cys Cys Asn Leu Phe Glu Lys Phe Phe Pro<br>690 695 700     | 2293 |
| agc agt tca tac aga aga cca gtc ggg ata tcc agt atg gtg gag gct<br>Ser Ser Ser Tyr Arg Arg Pro Val Gly Ile Ser Ser Met Val Glu Ala<br>705 710 715     | 2341 |
| atg gtt tcc aga gcc cga att gat gca cga att gat ttc gaa tct gga<br>Met Val Ser Arg Ala Arg Ile Asp Ala Arg Ile Asp Phe Glu Ser Gly<br>720 725 730     | 2389 |
| agg ata aag aaa gag gag ttc act gag atc atg aag atc tgt tcc acc<br>Arg Ile Lys Lys Glu Glu Phe Thr Glu Ile Met Lys Ile Cys Ser Thr<br>735 740 745     | 2437 |
| att gaa gag ctc aga cgg caa aaa tagtgaattt agcttgctct tcatgaaaaa<br>Ile Glu Glu Leu Arg Arg Gln Lys<br>750 755  | 2491 |
| atgccttggtt tctactaata acccgggcggc ccaaaatgcc gactcgggagc gaaagatata  | 2551 |
| cctcccccg ggcggggagg tcgcgtcacc gaccacgccg ccggcccagg cgacgcgcga  | 2611 |
| cacggacacc tgtccccaaa aacgccacca tcgcagccac acacggagcg cccggggccc   | 2671 |
| tctggtcaac ccaggacac acgcggggagc agcgccgggc cggggacgcc ctcccggccg   | 2731 |
| cccggtgccac acgcaggggg ccggcccgtg tctccagagc gggagccgga agcattttcg  | 2791 |
| gccggcccct cctacgaccg ggacacacga gggaccgaag gccggccagg cgcgacctct   | 2851 |
| cggggccgcac gcgcgctcag ggagcgctct ccgactccgc acggggactc gccagaaagg  | 2911 |
| atcgtgacct gcattaatga atcaggggat aacgcaggaa agaacatgtg agcaaaaggc   | 2971 |
| cagcaaaaagg ccaggaaccg taaaaaggcc gcgttgctgg cgttttttcca taggctccgc   | 3031 |
| ccccctgacg agcatcacia aaatcgacgc tcaagtcaga ggtggcgaaa cccgacagga   | 3091 |
| ctataaagat accaggcgtt tccccctgga agctccctcg tgcgctctcc tgttccgacc   | 3151 |
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**SECRET**

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 Leu Ser Ile Ala Pro Ile Met Phe Ser Asn Lys Met Ala Arg Leu Gly  
 340 345 350  
 Lys Gly Tyr Met Phe Glu Ser Lys Ser Met Lys Ile Arg Thr Gln Ile  
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 Pro Ala Glu Met Leu Ala Ser Ile Asp Leu Lys Tyr Phe Asn Glu Pro  
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 385 390 395 400  
 Ala Ser Leu Ser Pro Gly Met Met Met Gly Met Phe Asn Met Leu Ser  
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 Thr Val Leu Gly Val Ser Ile Leu Asn Leu Gly Gln Lys Arg His Thr  
 420 425 430  
 Lys Thr Thr Tyr Trp Trp Asp Gly Leu Gln Ser Ser Asp Asp Phe Ala  
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 450 455 460  
 Arg Phe Tyr Arg Thr Cys Lys Leu Leu Gly Ile Asn Met Ser Lys Lys  
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 Lys Ser Tyr Ile Asn Arg Thr Gly Thr Phe Glu Phe Thr Ser Phe Phe  
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 Tyr Arg Tyr Gly Phe Val Ala Asn Phe Ser Met Glu Leu Pro Ser Phe  
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 515 520 525  
 Val Ile Lys Asn Asn Met Ile Asn Asn Asp Leu Gly Pro Ala Thr Ala  
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 545 550 555 560  
 Cys His Arg Gly Asp Thr Gln Ile Gln Thr Arg Arg Ser Phe Glu Leu  
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 Lys Lys Leu Trp Glu Gln Thr Arg Ser Lys Ala Gly Leu Leu Val Ser  
 580 585 590  
 Asp Gly Gly Pro Asn Leu Tyr Asn Ile Arg Asn Leu His Ile Pro Glu  
 595 600 605  
 Val Cys Leu Lys Trp Glu Leu Met Asp Glu Asp Tyr Gln Gly Arg Leu  
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 Cys Asn Pro Leu Asn Pro Phe Val Asn His Lys Asp Ile Glu Ser Val  
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 Tyr Asp Ala Val Ala Thr Thr His Ser Trp Ile Pro Lys Arg Asn Arg  
 660 665 670

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Ser Ile Leu Asn Thr Ser Gln Arg Gly Ile Leu Glu Asp Glu Gln Met  
675 680 685

Tyr Gln Lys Cys Cys Asn Leu Phe Glu Lys Phe Phe Pro Ser Ser Ser  
690 695 700

Tyr Arg Arg Pro Val Gly Ile Ser Ser Met Val Glu Ala Met Val Ser  
705 710 715 720

Arg Ala Arg Ile Asp Ala Arg Ile Asp Phe Glu Ser Gly Arg Ile Lys  
725 730 735

Lys Glu Glu Phe Thr Glu Ile Met Lys Ile Cys Ser Thr Ile Glu Glu  
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acaaagtgtc gcccgagta ctggtcgacc tccgaagttg ggggggagcg aaagcaggca 180

aaccatttga atg gat gtc aat ccg act tta ctt ttc tta aaa gtg cca 229

Met Asp Val Asn Pro Thr Leu Leu Phe Leu Lys Val Pro  
1 5 10

gca caa aat gct ata agc aca act ttc cct tat act gga gac cct cct 277

Ala Gln Asn Ala Ile Ser Thr Thr Phe Pro Tyr Thr Gly Asp Pro Pro  
15 20 25

tac agc cat ggg aca gga aca gga tac acc atg gat act gtc aac agg 325

Tyr Ser His Gly Thr Gly Thr Gly Tyr Thr Met Asp Thr Val Asn Arg  
30 35 40 45

aca cat cag tac tca gaa agg gga aga tgg aca aca aac acc gaa act 373

Thr His Gln Tyr Ser Glu Arg Gly Arg Trp Thr Thr Asn Thr Glu Thr  
50 55 60

gga gca ccg caa ctc aac ccg att gat ggg cca ctg cca gaa gac aat 421

Gly Ala Pro Gln Leu Asn Pro Ile Asp Gly Pro Leu Pro Glu Asp Asn  
65 70 75

gaa cca agt ggt tat gcc caa aca gat tgt gta ttg gaa gca atg gcc 469

Glu Pro Ser Gly Tyr Ala Gln Thr Asp Cys Val Leu Glu Ala Met Ala  
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 Asp Gly Thr Ala Ser Leu Ser Pro Gly Met Met Met Gly Met Phe Asn  
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 Met Leu Ser Thr Val Leu Gly Val Ser Ile Leu Asn Leu Gly Gln Lys  
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<213> Artificial Sequence

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